Systems Projects at the Library/Inforum of the SLS/FLS/FLIS/FIS/iSchool from 1966 to 2008: A History

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Introduction:

After consultation with the Inforum Director and other professional staff, the decision was made to destroy all old program files and documentation concerning our old automated systems but to keep selected final output listings of these systems when still available.

This overview of systems work in the Library/Inforum during my time at the Faculty from Sept. 1977 until the end of 2008 was begun as I reviewed old files in my possession, as former Systems Librarian, in preparation for recycling in January 2009. It includes some information about earlier systems projects that predated September 1977 to try to give a more complete overview of the early development of automation in the Library. My coverage of systems projects will include our various attempts at automation even if they might not technically seem to be systems.

To create this report I reviewed old files and notes, School/Faculty Annual Reports (1965/66-991/92)¹, my old activity reports, and my memory. The Annual Reports were the basis for the information on the early years of automation. After the beginning of my employment in September 1977, I could supplement these Annual Reports with information from my notes, memory, and activity reports. After the Annual Reports ceased to be published, I needed to rely mainly on these unpublished information sources.

Conventions/Definitions:

In this report I have often included more detail on the older projects since the pre-automation situation is not very familiar to many people these days. Variations in my level of detail on various projects and in my writing style often reflect my level of personal involvement with these projects rather than the amount of work involved in or the complexity of them.

I have used various conventions while writing this report and will describe several of them in this section. Since the Publication manual of the American Psychological Association, American Psychological Association (2001) is one of the most popular style guides in the Faculty at the present time, I have used it throughout this report.

Activity reports: Since my activity reports are unpublished and confidential, I have cited them, and my other notes, in the APA style for personal communication: (M. Misiek, personal communication, date).

Annual reports: The titles for the School/Faculty’s annual reports have varied over the years. Most often they are known as Report of the Director or Report of the Dean but when I refer to them collectively I will call them Annual Reports. They are all cited in my list of References under the name of the Director or Dean who issued the report. Even though no Annual Reports were issued after 1992, I have included the later Deans below. The dates for the terms served by these Deans are taken from the Annual Reports and in the later period from my notes and from correspondence with Nadia. To assist in locating these reports, I am including here information on the terms served by these Deans beginning with 1964:

- Brian (R.B.) Land (Director, 1964 to 1972; Dean, 1972)
- Frances G. Halpenny (Dean, 1972 to 1978)
- Katherine H. Packer (Dean, 1978 to 1984)
- Ann H. Schabas (Dean, 1984 to 1990)
- Adele M. Fasick (Dean, 1990 to 1995)
- Lynne Howarth (Dean, 1995 to 2003)
- Brian Cantwell Smith (Dean, 2003 to 2008)
- Seamus Ross (Dean, 2009 to present)

Annual reports of the Library: These reports are included as chapters within the Annual reports of the School/Faculty. These are all cited in my list of References under the name of the Librarian in charge. Even though no annual reports were issued after 1992, I have included the later heads of the Library below. The dates for the terms served by these Heads are taken from the Annual Reports and in the later period from my notes and from correspondence with Nadia.

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¹ A note in our bound volume indicates that no annual report was issued for the 1986/87 academic year.
Moro (personal communication, August 7, 2009). To assist in locating these reports, I am including here information on the terms served by these Heads beginning with 1965:

- Asta Luik (Chief Librarian, 1965 to 1969)
- Barbara J. Mann (Chief Librarian, 1970 to 1973)
- S. Diane Henderson (Chief Librarian, 1973 to 1996)
- Joe Cox & Marte Misiek (Co-Managers, 1996 to 2001)
- Marte Misiek (Interim Manager, 2001 to 2003; Coordinator, 2003 to 2004)
- Joe Cox (Director, Inforum, 2004 to 2008; Interim Director, Information Services, 2008 to 2009; Director, Information Services, 2009 to present)

**ILS:** An integrated library system is the kind of automated library system that is common today. It includes an online catalogue and modules for circulation, cataloguing support, acquisitions, serials, and reserves control. These systems may also be known as integrated online library systems. I will use the abbreviation, ILS, throughout this report.

**Library/Inforum:** Throughout the earlier years covered by this report, we had a Library in which we performed library-related functions. The Library became the Inforum in 1997. A discussion of the significance of this change is discussed in a later section on the Creation of the Inforum. In 2008, another reorganization resulted in the Inforum becoming just the name for the fourth and fifth floors of the Bissell building. The library-related functions performed within the Inforum joined with web services and IT services to become known as Information Services. In this report I will refer to the institution or part of an institution that performs library-related functions as the Library except for the few times when I am discussing the actual creation of the Inforum or happenings during the period from 1997 to 2008. Whenever I refer to the Library without qualifiers I mean the Library of the School/Faculty.

**Library’s archives:** At various times I will refer to listings having been sent to the Library’s archives. At this time this archives exists mainly in boxes in our storage areas; its creation is planned for a future project.

**OPAC:** I will use this abbreviation when referring to an online public access catalogue or online catalogue, for short.

**SLS/FLS/FLIS/FIS/i-School:** An explanation of these abbreviations is provided here:

- School of Library Science (SLS), 1965-1972;
- Faculty of Library Science (FLS), 1972-1982;
- Faculty of Library and Information Science (FLIS), 1982-1994;
- Faculty of Information Studies (FIS), 1994-2008;
- Faculty of Information (i-School), 2008 - present.

**UTCC/UTCS:** UTCC refers to the central University of Toronto Computer Centre (UTCC); this later became known as the University of Toronto Computing Services (UTCS). I have been unable to determine the date of this change but suspect it was around 1985.

**UT library community:** By UT library community, I mean UTL (the Central Library) and all of the 40 or so libraries, including the Faculty’s Library, that make up the library community at the University.

**UTL:** I will use UTL to refer to the Central Library at the University of Toronto, i.e. Robarts, Science & Medicine, etc.

**UTLAS/Utias:** UTLAS is the acronym for the University of Toronto Library Automation System. The UTL systems department was established as a separate division within the University under this name in 1971 (Blackburn, 1989, p. 290). It became Utias, Inc. in 1985 when UTLAS was acquired by International Thomson Organization (Saffady, 1993, pp. 67-68).

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2 Diane published annual reports under both S.D. and D. Henderson; her reports have been referenced as authored.
Document Structure

In the first section of this report, I will give an overview of the various stages in the development of our use of automation within the Library. In later sections I will provide more specific information about the development of automation within various functional areas including:

- Serials
- Technical Reports
- Cataloguing and the OPAC
- Xerox Files
- Online Searching
- Acquisitions
- Reserve Collection
- Circulation
- Interlibrary Loan
- Selected Miscellaneous Projects

I have tried to arrange the later sections by the date that automation was first introduced into that function based on the information that I have been able to uncover from the School/Faculty Annual Reports or, in some cases, from my personal involvement. Since I was not very involved in most of the web work and other non-library related automation of the Faculty, I will not cover it in this report except as it relates to work done under my direction for the Library.

With respect to the Library’s participation in the development of the Faculty’s web site I would like to note here that we participated in the early committees to develop and then redesign the site, including the initial Gopher site. The Library had a prominent position on the home page and our own content from the beginning. In the first redesign of the web site, we also had our own home page. All of my old web committee notes are now gone but as early as my 1994/95 activity report I mention that I participated in the FIS Web Committee (M. Misiek, personal communication, May 1995) and in the next report I note that we developed a set of Library web pages for the Faculty’s home page including the Collection Development Policy, Electronic Journals page, and Reference question form in September 1995 (M. Misiek, personal communication, May 1996).

General Overview

It amazes me now, from my position in the world of 2009, to look back over the years and to remember how little automation there was in the FLS Library when I came in September 1977. Most of our work at that time was done manually, in other words by using a typewriter or paper and pencil/pen. Our only use of automation involved the entry of some information into machine readable form to create databases. These databases were stored on mainframe computers at UTCC and UTLAS. In the case of UTCC, getting output from these databases involved running batch programs by submitting decks of punched cards through a card reader. Printouts would then be printed on a line printer, also at FLS. Key punch machines, the card reader, and the printer were located in room 116. In the case of UTLAS, we received the output of cards for our card catalogues. As I remember, data entry into these UTCC databases was done using a teletype terminal located in room 224. I have a vague recollection of a teletype terminal in our Library office for the UTLAS work. These teletype terminals allowed editing one line at a time by retyping the line to correct any errors. The systems in use at that time will be covered in later sections of this report.

As I have been researching this report, I have been struck by the way that our automation work seems to break down into a number of phases. I have decided that it would be helpful to present our history within the terms of this framework as an overview and then to relate each function to this framework, where appropriate, as I discuss it later. These phases mainly apply to the development of automation within the Library but, in many respects, also describe the development of automation within the School/Faculty and also within the library world as a whole. These phases are:

- The Library as Experimental Lab (1966 to 1971)
- Shift From Research to Applied (1971 to 1976)
Many of these phases would not have been experienced by most other libraries. Our unique attachment to the School/Faculty meant that the Library was more involved in the early days of automation and in the research aspect than most. Certainly the introduction of the standalone microcomputer, the movement to a LAN or at least to Internet access, and participation in an ILS would have been common to many libraries.

The Library as Experimental Lab (1966 to 1971)

My research on automation has led me further and further back into the SLS Annual Reports to try to find the beginnings of automation in the Library. This search brought me back to 1966/67 and the establishment of a data processing laboratory at the School. As reported by Land (1967):

Under the direction of Professor William Kurmey, a data processing laboratory containing punched card equipment has been installed in the School. The basic units include an IBM 026 keypunch, 083 sorter, 087 collator, 407 electronic accounting machine and the 870 document writing system with upper and lower case character set... Present plans include utilization of the School's own departmental library as a research model. A major developmental objective is to provide a basic collection of machine-readable data making use of data processing equipment wherever feasible for controlled experiments in testing library systems analysis and simulation techniques, research hypotheses relating to the mechanization of library operations and equipment application studies. (p.9)

The early days of automation in the Library coincided with the introduction of automation into SLS and into its courses and research. The first professor to teach systems courses and do research in this area, William Kurmey, was hired beginning with the 1965/66 academic year (Land, 1966, p. 11). He received some funding in 1966 for a research project on "mechanized applications in libraries". This study was "partially supported by an operating grant from the National Research Council" by way of the Library Automation Research Group (LARG) (Land, 1967, pp. 9-10). It seems that this research funding continued for several years because it is still mentioned by Land as late as 1970 (Land, 1970, p.8).

The reporting of early automation work involving the Library is often split between the Library and the Automation sections of the Annual Reports. It is difficult to piece together a clear picture of the Library staff involved in or of the planning stages for or even of all of the projects that grew out of this early work. However, that this co-operation between the Library staff and the researchers occurred is not in doubt as indicated by Land (1968), “A number of development projects involving departmental library personnel and students from LARG have been initiated and are nearing completion” (p. 12).

The creation of databases of machine-readable records was critical to the early automation research done at SLS by faculty and students. The Library often provided the basic information for these databases in the form of bibliographic information for some of our collections, such as Serials and Technical Reports. We benefited from the listings produced as discussed in greater detail in later sections of this report. It seems that one of the earliest automation projects in the Library, done in this lab, was a list of serials holdings for the Library. Kurmey (1969) reported in greater detail about some of the databases developed:

Ten databases ranging from 1,000 records to 25,000 records were transferred to disk storage. The data include bibliographic records of technical reports, journal articles and serials in the field of library science. These will be used both by the School’s library for generation of printed catalogues and by students for testing computer programming problems. Updating capability using 2260 consoles neared implementation; programs were being tested to enable data entry and correction at the console. (p. 34)
Although the data processing lab and automation at SLS began when the School was still housed at the McCaul Street location (Land, 1966, p.5), the lab really expanded after the move to the newer and larger facilities at 140 St. George Street in June 1971 (Land, 1972, pp. 12, 30-31). This facility is now known as the Bissell Building. As far as I can determine the Library benefited from work done in this lab for many years.

Even though I have included a separate section for research and assigned it a time frame, I do not mean imply that the Library did not participate in research throughout the whole period covered by this report. Research continued to involve the Library and its staff. Some of its participation will be covered in later sections. By setting aside a special research section I hope to stress the fact that our early use of automation for basic functions in the Library only developed out of our participation in research projects.

**Shift From Research to Applied (1971 to 1976)**

It seems that the shift from automation as a research project to an integral part of the work of the Library was gradual. One of the necessary conditions for this shift involved the presence of regular staff to work on projects. Just as hiring a professor to teach in the area of automation signaled the need of the School to move into this area and led to new research, new research funding, and the purchasing of new equipment, so, too, the hiring of a Faculty programmer and a librarian, who had a responsibility for data processing as part of her duties, led to increased use of automation in the Library and to more stable systems. I suspect that, in fact, these new positions indicated a change that had already begun rather than actually instigating the shift.

The start date for the first data processing librarian is easy to determine. Mann (1972) reported that "The Library was most fortunate to have Mrs. Janet Bamford join the professional staff in July of 1971. Her responsibilities include supervision of collection development and acquisitions, and participation in the various projects of the Library involving data processing" (p. 38).

It is curious that it is much harder to determine the hiring date of the first Faculty programmer. Many staff members are not listed in the Staff section of the Annual Reports or even mentioned in the body of the reports. After a fairly careful reading of the reports, I have determined that there was definitely a programmer on staff during the 1972/73 academic year since Jane Yates is mentioned as the Faculty programmer (Mann, 1973, p. 26-27).

Other Faculty research projects also moved away from research to application as the Faculty began sharing them with non-UT locations. Halpenny (1974) summarized one of the accomplishments in data processing for the 1973/74 academic year as:

... the establishment of a policy on the sharing of programs and data bases developed within the Faculty.... Policy in this regard was urgently needed because the Faculty had already received requests for the Key Word Retrieval Program developed by Professor D. Forgie and Mrs. Jane Yates (formerly FLS programmer) and also for SIMCOE, a simulated on-line cataloguing system and an adaptation of the Key Work Retrieval Program, developed by Professor D. Cook and Mr. S. [sic] Bacon (FLS Programmer). (p. 15)

This move from research to applied mode also happened outside of the Faculty as UTL established its systems department as UTLAS in 1971 (Blackburn, 1989, p. 290). In the early days UTLAS was still mainly involved in research but the UTL COM catalogue and CATSS were developed by it (Blackburn, 1989, p. 291-292). The Faculty was involved in the early development of and even funding for this facility (Land, 1972, pp. 30-31).

It seems that the Library’s early batch programs were run against databases were that were stored on mainframe computers located at UTCC; the Robarts computer seems to have been used mainly for education and research purposes. Over the next few years we continued to develop these mainframe-based systems, especially the serials system.
We also began entering our bibliographic records into machine-readable form. In 1976 we participated in the CATSS system with the rest of the UT library community. These early efforts led to the joint UT library community database that is the basis of the Sirsi system database today.

**Planning and Preparation for an ILS (1976 to 1988)**

In the early days, our automation projects were related to single functional areas like serials control. As automation matured we started to plan for a more integrated system. Land (1971, p. 16) mentioned that a project to create machine readable bibliographic records for our collection was begun with a future automated circulation system in mind. In 1979/80 we began exploring the possibility of an online catalogue and automated circulation system more seriously. Henderson (1980) reported that:

> ... we began discussion and planning of Library needs and participation in further development of the Faculty's mini- and micro-computer systems. Initially an online catalogue search capability and an automated circulation system are being considered as part of general Faculty planning. Marte Misiek has represented the Library in the planning process with the administrative data processing committee. (p.19)

The discussions and planning continued for many years and involved consultations with staff and faculty. We moved from thinking that we would need to develop our own in-house system to the realization that it would be more reasonable to have a small in-house micro-mini-computer-based system using purchased software. As the UTLAS ILS neared readiness for implementation, it became necessary for us to take participation in this system into consideration also. Planning continued as reported by Henderson (1986):

> In the facilities and planning area the major project was the development of plans and specifications for an online public-access catalogue (OPAC) to enhance access to the collection for the Library's users. With a substantial number of records in machine-readable form, the costs of OPAC systems declining and the choice increasing, it appeared feasible to begin to make specific proposals for an online catalogue to be a reality in the near future. The librarians held many meetings to consider draft proposals prepared by Marte Misiek based on wide consultation. A questionnaire was administered to our various user groups the better to assess their perceived needs and expectations in an online catalogue and circulation system. Much of the response was incorporated into the final proposal. This proposal, detailing our environment, needs and general specifications, was completed and submitted to the Dean in the late fall. A number of available systems will be explored to determine if our specifications can be met to a satisfactory degree. We will also be assessing the implications of the online circulation/inquiry system in the University Library when it is up in mid-1987. Of course, the major hurdle D a formidable one D remains the funding of the project. (p. 8)

Along with the discussions concerning requirements for our ILS, reviewing possible systems, and considering funding options, we also needed to prepare the collection for this transition. This preparation included creating machine-readable records for a large part of our collection and then barcoding the physical items in the collection and linking these barcodes with the machine-readable records. The creation of our machine-readable records in the form we are currently using for our ILS actually began in 1976 when we began using the CATSS system. This preparation will be discussed in greater detail in the Cataloguing and Circulation Sections.

Finally in spring 1988 we gave up the idea of going it alone and joined the UTL OPAC, 'Felix' (Henderson, 1992, p. 7). Our plans for a circulation system were put on hold until 1991 (Henderson, 1992, p. 8).


It seems that some of our earliest uses of automation for administrative purposes actually involved the mainframe computer. Henderson (1975) mentions that “The text of the [circulation] manual has been stored on ATS for convenient updating as changes are made in procedures” (p. 20). However, mainframe use for this purpose did not turn out to be very convenient and staff did not make much use of computers for administrative purposes until we purchased our first microcomputer.
In the middle of our planning for an OPAC, the microcomputer finally began to come into its own. The Faculty already had a micro/mini-computer for teaching purposes, but in May 1983 we installed, in the Library, the first microcomputer in the Faculty dedicated to administrative purposes. Henderson (1983) described this event:

A major event this year was the selection and purchase of an IBM PC XT microcomputer to be used for administrative and retrieval functions by the Library. The Library was assisted in the purchase by support from the FLIS Alumni for approximately half the cost. The microcomputer will not replace our computerized systems already operating on other computers (i.e. the serials system which runs on Computer Centre facilities, and the catalogue input on the CATSS system), but will be used to develop other areas. (p. 23)

Our first microcomputer was only used by Library staff. All staff were encouraged to learn how to use our word processing package, WORDSTAR. Initially Henderson (1984) reported that we "used it for preparing manuals, reports, bibliographies, and a variety of other textual materials. It is used to produce and print our two publications, Forthcoming Meetings and Library and Information Science UPDATE, allowing more flexibility in inputting of records." (p. 9)

In May 1983 all Library staff shared one microcomputer, an IBM PC XT with a 10 MB hard drive and running DOS, probably version 2. This computer was located in the room which is now used as the Inforum staff lounge. Within less than 2 years we had need of a second microcomputer. We then began using our first microcomputer as an intelligent terminal to connect to external databases via a dial-up modem. Henderson (1985) described the acquisition of our second microcomputer:

Extremely heavy routine use of the microcomputer bought in 1983 led us to add a second IBM PC-XT in April of this year; as well, we upgraded our original computer to be able to access CATSS II as an intelligent workstation. We were also able to acquire a second, better quality printer to improve our printed products. To accommodate the second micro, we moved the microform readers out into the Library and placed the micro used for online searching and online cataloguing in the Microform Reading Room. (p. 6)

We continued to add shared computers for several more years. By 1988 we were up to 4 computers, including one for public use as a workstation to search our CD-ROMs. In 1991, a shared workstation for only cataloguing staff was added (Henderson, 1992, p. 7). In 1993, we began planning for a reference workstation to be located at our reference desk in the public area for the use of the librarian on duty. Finally this workstation became a reality in the 1995/96 academic year after the LAN was brought into the Library (M. Misiek, personal communication, May 1996).

Of course today we continue to use staff microcomputers but now they are either networked on the iSchool LAN or have wireless connections to the Internet.

Transition from Mainframe to Microcomputer (1985 To 1988)

As the microcomputer increased in capability and became more pervasive, we began to rethink our use of the UTCS mainframe computers for some of our systems and to consider whether an in-house microcomputer solution might be a cheaper option. We were helped in our decision as UTCS began to work toward a more decentralized model for computing at the university by discouraging mainframe access and increasing the cost of using it.

The transition happened in two phases. The switch began at the Faculty level as our link to UTCS was dropped. Henderson (1986) reported on this change (1986): “FLIS phased out its card reader and UTCS port so all our card files for Xerox File, Technical Reports and Serials Systems were converted to Wylbur files. All output is now produced at the UTCS computer centre” (p.9). With this change it became much less convenient to pick up our output. Instead of retrieving the output of our batch programs from room 116 at FLIS, we needed to walk to the computer centre every few months to pick it up.

The next phase involved reassessing our batch systems. Henderson (1992) explained the background for this review:
... the University’s Computer Centre phased out the systems on which several of our programs had been running. This gave us the opportunity to evaluate these programs, move remaining files and write new software to run them in-house on our microcomputers. Most recently, we moved our serials database to INMAGIC to control the various “housekeeping” functions for serials, including follow-up, renewal and binding. (pp. 8-9)

From 1985 until 1988 we began to slowly migrate our batch systems from UTCS to our local microcomputers. Phasing out a system was also a possibility but in the end we considered all three of them useful enough to migrate. Serials were handled by the Inmagic software; technical reports and Xerox files were moved to dBASE II or III+ software. These systems will be discussed in later sections of this report.

The Standalone Microcomputer - Public Computing (1987 to 1993)

Of course, many of our technical services computer applications improved service for our public. However, it was several years before we actually had any microcomputers that the public could use without assistance from a librarian. Finally, in 1987 we acquired a computer for the use of our public. The situation surrounding the acquisition of our new computer was reported by Henderson (1992):

In the spring of 1987 we received a gift of a CD-ROM workstation from the H.W. Wilson Co., the first such workstation on campus. It was an immediate success. It has made database searching more powerful and convenient for our students, faculty and other users of the Library. In addition, we were able to offer demonstrations and advice to many area librarians who wanted to evaluate CD-ROMs for their libraries. (p.8)

Initially we provided access to the Wilson database on CD-ROM, Library Literature. Over time we increased our database selection to include additional products. With this computer, our CD-ROMs could only be used one at a time. They were kept behind the circulation desk and could be signed out as needed. Again, this was a shared computer, but its provision meant that our students no longer needed to rely on our staff or on access to costly online databases to do searching for their assignments.

We also added other sample software like Inmagic, and products of more general interest like the Oxford English Dictionary on CD-ROM, some encyclopedias, and children’s books. In 1991 we purchased a minichanger that allowed us to search across more than one CD-ROM at a time so that we could handle the Library of Congress CD-MARC Bibliographic which was issued on 3 CD-ROMs.

Participation in an ILS (1988 to present)

An ILS includes at least an OPAC, online circulation and reserves module and modules for cataloguing support, acquisitions and serials control. The ILSs available during much of our planning phase would be considered quite rudimentary when compared with today’s systems. In the early days our hopes did not extend beyond an OPAC and online circulation system.

Our planning phase took place over more than 10 years. Our move to a full ILS took twice as long. Once the decision was made to join the UTL T/Series 50 system, acquired from Utals, Inc., we already had our most recent records in machine-readable form. The T/Series 50 system was implemented by UTL in February 1988 (“UTL inaugurates,” 1988). As soon as use of the system was extended beyond UTL, our records began to appear in the OPAC, ‘Felix’, in spring 1988 (Henderson, 1992, p.7). We also had terminals in the Library so our users could search it. However, initially the OPAC was the only module available to libraries outside of UTL. UTL brought additional libraries into the circulation component gradually over the next three years. No acquisitions and serials modules were ready at that time. We managed to barcode our collection fairly quickly and entered into the circulation module in 1991 (Henderson, 1992, p.8).

The T/Series 50 system did not have the full functionality of an ILS or even enough to serve UTL. During the next year UTL searched for a new system and brought up the DRA Integrated Library Software, from Data Research Associates (DRA), in August 1992. We moved to this new system with the rest of the UT library community participants (Henderson, 1992, p.8). Although DRA had both acquisitions and serials modules, the FLIS Library
chose not to participate in them immediately. We had a functioning in-house acquisitions system already and did not have staff time to bring up these additional modules. It was not until 1997 that we entered the acquisitions module. The serials control component took even longer to implement. We did not begin participating in the serials control component until after UTL brought up a new ILS, the Unicorn Library Management System from Sirsi Corporation (Sirsi), in 2002 (M. Misiek, personal communication, May 2002). We began converting our current serials subscriptions to online serials control in 2005 and finally finished the process in 2008. In 2008 UTL upgraded its ILS to the web-based ILS, Symphony, from the company now known as SirsiDynix (M. Misiek, personal communication, May 2008).

Introduction of the LAN (1991 to 1997)

My notes and memory concerning the entry of the Library into the Faculty’s local area network (LAN) are either vague or non-existent but after reviewing our other automation work during this period, I think I have developed a sense of how our participation progressed.

The first participation of the Library in a kind of network was actually at the time we brought up our first ‘Felix’ terminals for our participation in the T/Series 50 OPAC in 1988. Wiring was run from the Robarts Library building so that our terminals could access the ‘Felix’ database.

The Annual Reports at least indicate that the Faculty’s LAN was set up by the end of the 1991/92 academic year. Cherry (1992) reported on the initial LAN set up:

By the end of the period, the configuration consisted primarily of a Novell Network supporting approximately 60 workstations. All faculty members have workstations in their offices; for FLIS students, we support a Computer Lab equipped with 30 workstations. …From any of the 60 workstations connected to the network, a student or faculty member can access a variety of applications, e.g., WordPerfect, Lotus, dBASE, email, a notice board, communications software and a pool of network modems to dial out to external databases (Dialog, University of Toronto Library, etc.), statistical packages, (SAS, SPSS), and compilers (Turbo Pascal, C++). (p. 3)

By my recollection, the Library moved onto the LAN in stages. In 1990/91, I served as the Library’s resource person for the extension of the FLIS LAN to the Library (M. Misiek, personal communication, May 1991). Initially the LAN was brought into the Library so that we could make our CD-ROMs accessible to more than one user at a time and also to users from outside of the Library. As Henderson (1992) reported:

The selection, acquisition and installation of equipment to mount our major CD-ROMs on the FLIS LAN was a major project in summer 1992. This project was completed in the summer of 1992. The LAN has proved a useful resource for Library staff for software, e-mail and Internet access. (p.9)

Even though Henderson mentioned the use of the LAN by Library staff, my notes and recollection indicate that there were still only a couple of shared computers in the Library office that were added to the LAN for use by staff. During the 1992/93 academic year I worked to locate a sufficient number of individual microcomputers so that each staff member could have his/her own (M. Misiek, personal communication, 1993). These computers were finally installed and staff had improved access to the LAN from their own desks in 1993 (M. Misiek, personal communication, 1994).

As with the staff computers, initially we only had a few microcomputers on the LAN for the use of our public. These networked computers were available for searching our CD-ROMs and the OPAC. It was only in 1997 when we opened the Inforum that we had many more networked computers available for our users. In the redesigned facility we had almost 40 computers on the LAN for student use.

Creation of the Inforum (1994 to present)

The increasing importance of automation in the Faculty and in the information world led to a rethinking of the Library itself. I discussed some of the early days of this rethinking in my 1995 report, Discussion paper on a proposed merger
of the Library and Information Technology Services of the Faculty of Information Studies. The FIS Library’s Academic Plan from 1994 recognized “the need for closer coordination between the Library and FIS Information Technology Services to improve the over-all effectiveness of information technology in the Faculty” (as cited in Discussion paper, 1995, p. 1). This initiative was supported when the Committee for the Review of the Faculty of Information Studies recommended in its report that a review of the Library pursue “the integration of the Faculty’s administration and management of academic computing and information technology into the library … as soon as practicable” (as cited in Discussion paper, 1995, p. 1). The benefits of a merger are discussed in greater detail in this Discussion paper (1995).

A number of events in 1996 converged to make conditions right for the creation of this new entity. The Chief Librarian, Diane Henderson, retired in June 1996. A revision of the Faculty’s Academic Plan under Dean Howarth supported our proposal to refocus and reorganize from a more traditional library into an integrated library and information lab (M. Misiek, personal communication, May 1997). As a result of this plan, the Provost provided the needed funding in 1996. Then the Dean established a Task Group on the Info Lab to make this lab a reality. Joe Cox was the Chair; I participated as a Library representative (M. Misiek, personal communication, May 1997). After months of planning and a summer of construction, the new space, officially called Inforum: the Integrated Library and Information Studies Laboratory, was a reality in September 1997. The official opening was on October 3, 1997 (“The Inforum opens,” 1997).

The physical Inforum grew out of a complete redesign of the main floor of the Library, including the staff workspace. The new space included:

- A user-friendly information desk that combined circulation and reference services
- An instructional lab with 18 workstations and an instructor’s workstation with overhead projection unit
- Three multimedia group study rooms
- 18 Networked workstations on ergonomically designed desks for exclusive use of our students
- A printer/photocopier room
- A redesigned staff office area including two new offices with one for the network administrator.

This redesign allowed for the integration of print materials with computer access in one location. But, the new physical set up was only the outward reflection of our changes. The Inforum represented a renewed commitment to the provision of more immediate and friendly service to our users (M. Misiek, personal communication, May 1998). As reported by Cox and Misiek (1998):

... the physical changes are not the most important; they simply reflect the more fundamental goals of the Inforum. We are responding to the changing needs of the curriculum in library and information science, information systems, and archives. We are highly aware of our mission in the education of leaders in the emerging global information society. We are providing a model for the changing face of information services. We are striving to create a new, integrated information facility, combining people, technology, services, and information resources in one location. (p.24)

The Inforum has continued to develop over the years as new technologies have come into common usage. Wireless access is now provided for our users. Laptop computers are available for loan. This combination of Library and information technology did not, however, include a merger of the management and administration of these two functional areas in 1997. That administrative merger happened in 2008 with the creation of the Information Services unit. After its merger with the information technology and web services units of the Faculty, the meaning of the name Inforum changed so that now it only refers to the fourth and fifth floor space in the Bissell building. However, the library functions continue to be housed in this space. The Inforum continues to evolve. Further changes are planned for the coming year as the Library/Inforum remains an integral part of the teaching and research of the Faculty.

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3 I neglected to sign the report and so have not referenced it under my name.
Serials

The serials collection consists of three subcollections in paper: journals and newsletters (also known as the periodical collection), library annual reports, and library school calendars. Since around 1995, it has also included electronic journals and newsletters. In 2009 the library school calendars were merged into the periodical collection (N. Moro, personal communication, August 7, 2009).

Some of our serials titles are considered ‘current’; in other words, we have subscriptions for these titles and continued to regularly receive new issues. ‘Closed’ titles include titles that have ceased publication, are currently being published under a new title, or for which we have cancelled our subscription but still retain the issues we already received in our collection. The paper part of this collection is arranged on the shelves alphabetically by main entry within each subcollection. It is not classified. Currently, most of the titles in the collection are fully catalogued.

It seems, from the Annual Reports, that serials, if not the first function, was at least one of the earliest to be automated in the Library. I found this somewhat surprising since, in many respects, it has taken the longest to complete. However, upon further reflection it is an eminently reasonable choice for automation since the serials collection is an important one that would have been relatively difficult to access in 1966 by using only the card catalogue and the Visi-file. The Visi-file was long gone when I started at FLS but I suspect that it was just a list of serial titles in a vertically standing circular display similar to ones that can still be used to display microfiche. Automation of serials could be especially useful if it resulted in the production of multiple copies of a listing of our serials and if the listing included, as planned, the holdings for these serials.

When I arrived serials information was maintained using a manual Kardex system. Lists of titles to claim and subscriptions to request were produced on a quarterly basis using the old serials system below. A Public Serials list was also available for our users. Now in 2009 we use UTLÕs Sirsi ILS for the check-in and claiming of issues and for recording invoice payments. After inputting the holdings for all of our currently received titles, we are about three quarters of the way through the process of inputting retrospective holdings for the rest of our serial titles. Information on our holdings display in the OPAC.

Early Days of an In-house Serials System (1967/68 to 1973)

Preparation & Inaugural Version (1967 to 1969). During 1967/68 work began to prepare our serials for the first stage of an automation project by collecting and cleaning up the necessary data. Luik (1968) reported on this project:

The recataloguing of the bound periodicals, using grid cards to record holdings; the correction of periodical entries where necessary in order to achieve consistency among the catalogue, the Kardex and the Visi-file; the addition of necessary see references to the catalogue; and the gathering of information for a machine-produced serials list, which will provide an up-to-date list of serials received by the library, indicate gaps in our holdings, facilitate inter-library loans, and serve as a checklist for renewal purposes. (pp. 15-16)

No mention seems to have been made of the planning stage for this project in the Library section of the Annual Reports but the Automation section attributes it to Mrs. Mary Stevens, Teaching Assistant (Kurmey, 1969, p. 35). In those days, automation meant creating machine-readable records, usually not yet in MARC format, and then using these records to produce lists in batch mode. This project began as a research project. Kurmey (1969) described the early serials system:

The rapidly expanding holdings of serials currently received by the School of Library Science Library, now approaching 1600 titles, were keypunched into machine-readable form. This work was partially supported by a National Research Council grant. The form of entry follows Anglo-American cataloguing code, and many cross references were added. Volume and date of the beginning of the Library’s holdings for each title are included, and missing or incomplete volumes are indicated. Twenty-four computer-produced copies of the complete list of serials currently received are now produced quarterly for library and faculty. These are updated by computer-produced monthly cumulating supplements. With serial titles presently being added to the library at the rate of about 10 per week, a weekly computer-produced list of new titles has been added to the serials system. Since the weekly list is seen mainly as an aid to current awareness it does not cumulate
and does not include cross references. The complete machine-readable serials record has recently been read onto disk storage. This will be routinely updated, and quarterly lists will be produced directly from disk storage in the near future. (pp. 35-36)

Unfortunately no output, records, or manuals remain from this system and I can only guess at how it actually worked. From what has been stated above, I suspect that the serials information was first key-punched in machine-readable format onto cards. At a later date, this information was read onto disk for easier and safer storage. It may have been that the early output was produced from these key-punched cards. The main output of this system seems to have been an alphabetic book catalogue called Serials Currently Received (Luik, 1969, p.18). This listing proved to be particularly useful when the School moved into its new home on St. George Street in 1971. In its new home, the Library occupied two floors with the card catalogue on the fourth floor and the majority of the serials collection on the fifth floor (Mann, 1972, p. 43).

Refinements (1968 to 1971). After the initial programming for the book catalogue was completed, work turned to refining the serials system. The next phases included a semi-automated serials check-in system and the production of serials holdings cards for the Library’s card catalogue and for reporting our holdings to the National Union Catalogue (Kurmey, 1969, p. 36).

To implement a check-in system, coding needed to be added to each serials record to allow for the prediction of the next expected issue. This coding would also allow for the production of counts and lists of different kinds of serials such as foreign language serials, public library annual reports, or library school calendars (Mann & Willoughby, 1970, p. 22).

The check-in module was implemented in the 1970/71 academic year. It was called a check-in system but was quite primitive when compared with the kind of system that we use today. It was more like a prediction system. Mann (1971) included a description of the new check-in system:

The year was highlighted by the successful operation of the check-in system which serves to alert the Library staff of missing and long-overdue issues. Every month the computer produces a desk of cards; each card represents an expected arrival during that month. As the serials are checked in on the Kardex, the cards are pulled and discarded. Card remaining at the end of the month represent delayed or missing publications which, after a suitable waiting period, can be claimed. Despite a few problems in accurately predicting arrival times, especially acute with irregular titles, the system has proved most effective. (pp. 35-36)

As far as I can determine the card production function was never completed for this system. This project seems to have been the most useful one for the Library to grow out of this SLS research phase.

Sharing of information Outside UT (1970 to 1973). An offshoot of the serials system was a project to create a union list of serials held by all eight Canadian library schools; our serials database was to serve as the basis for the list. The project began in the spring of 1970 (Mann, 1971, p. 36) and was coordinated by Barbara Mann, Chief Librarian (Land, 1971, p. 16). After a strong start, the project hit a snag. Additional, external funding was needed to complete it. In her next report Mann (1972) described the project in greater detail:

For some time now the Chief Librarian has been coordinating efforts to produce a Union List of Serials Currently Received by Canadian Library Schools. Last year machine-readable records were created for two schools, Ottawa and Montreal. Unfortunately, financial resources for inputting and editing assistance were no longer available. During the winter of 1972, application was made to the Research and Planning Branch of the National Library for funding to finish the project. To date assistance has not been provided but the proposal has not been turned down, and therefore there is still some hope that the project may yet reach completion. (pp. 48-49)

It seems the funding never arrived. There is no further mention of the project after Barbara Mann resigned as Chief Librarian in June 1973 (Halpenny, 1973, p. 20) and it seems to have never been completed.
Version II of an In-house Serials System: Conversion to MARC Serials Format (1973 to 1988)

Of course, developments in computing power, systems design, and the representation of bibliographic information in machine-readable format continued to progress while the first serials system was being developed and used. Planning began on an upgraded version in 1973 through the work of Jan Bamford, Acquisitions & Data Processing Librarian, and George Bacon, Faculty Programmer. Henderson (1974) described the redesign:

A major development in the serials area is the redesign of the automated system based on the MARC serials format. The existing punched card based system has been cumbersome to update and was incomplete in terms of both serials included and data elements. The system and its beginning implementation were carried through by Jan Bamford and programmed by George Bacon. It is an interactive system with capability to input, edit, and print on-line, with certain functions performed in a batch mode. To the capability and data base of the existing system have been added the advantages of on-line editing; complete bibliographic information in the entry; convertibility to MARC communications format; machine formatting of records; more adequate follow-up and renewal alerting. At the end of June, the basic programming had been completed, the existing serials data base converted (all data elements transferred and tagged) to MARC format, and editing of records for completeness and accuracy begun. When completed the library will have a full record of its serial holdings, living and deceased, in a standard format, useful as an acquisitions, catalogue, and reference tool. (p. 18)

The system that grew out of a SLS research project was no longer sufficient for our needs. Our new system would apply the fruits of that research and also of research done elsewhere. The data from the first serials system could be used as the basis for the database of the new version. However, once the data was translated into a MARC-like format, each record needed to be edited to upgrade the cataloguing and to add additional information new to the MARC format. Work continued on the project as Rosemary Tessier took over from Jan Bamford in May 1974 (Henderson, 1974, p. 19). Most of the data upgrading and the first phase of this version had been completed by the end of the 1975/76 academic year. Henderson (1976) reported on the progress of the recataloguing:

With the exception of the Annual Reports Collection, all the unclassified serial collection has now been catalogued (or recatalogued from brief entries) and entered into the serials machine readable data base. A book catalogue of serial holdings is updated quarterly from the data base, and several copies are available in the Library. In addition to the full list for bibliographic access, the serials system generates checking lists for follow-up, subscription renewals and binding. In the spring the collection was inventoried and holdings of bound volumes were updated and entered into the data base. The serials collection is now in good shape, bibliographically and physically, the result of three years of continuing effort by the serials and systems staff. (p. 22)

A final refinement for this version was the addition of a name authority subsystem which would provide references for the printed serials list (Henderson, 1977, p. 40). I took over completing this project with George Bacon in September 1977. Henderson (1979) described the completed project: “The automated serials system has been completed, with final revisions and documentation. It serves as a serials management system for all aspects of serials maintenance except check-in, and for bibliographic control of titles and holdings” (p.21).

In its final form we used the Serials System to produce various listings, including:

- An annual Serials Authority Master List,
- An annual Serials Master List
- An annual Serials Public List, to provide access to the collection for our users
- Quarterly Follow-up Claiming Lists
- Quarterly Binding Lists
- Quarterly Subscription Renewal Lists, to assist staff in maintaining the currency of the collection
There was also a small statistical report of open titles to provide information for our annual reports. We continued to use this Serials System until 1988 when it was phased out and replaced by the next one. A copy of the Public Serials List from 1988 has been sent to the Library's archives.

**Transition from Mainframe to Microcomputer: Serials Control using Inmagic (1985 to 1998)**

The move of the serials system from the UTCS mainframe to our microcomputer happened in several stages and over several years. After the Faculty lost it computer link to the University’s Computer Centre around 1984/85 (Henderson, 1985, p. 6), we began to rethink the serials system. For several years we continued to use the old system but retrieved our output from the Centre instead of printing it at FLIS. It was inconvenient, but the output was still useful for us. As personal microcomputers became more powerful and their software more advanced, it became feasible to consider duplicating the system on a microcomputer. After researching several options, we decided to move the Serials System to the Inmagic software. The work for this new version was done entirely by myself.

The bibliographic and authority records in MARC-like format were output from the UTCS mainframe computer to tape. The Data Magician software, running on our microcomputer, was used to transfer the records to a format that could be used by Inmagic. Once in Inmagic format the records needed additional editing. Reports for output also needed to be created. About 1500 records were transferred to the new system. The data was copied from the UTCS mainframe in 1988 (M. Misiek, personal communication, May 1989).

By using Inmagic we lost the ability to store our bibliographic data in a MARC-like format. We decided this was a relatively unimportant loss since the bibliographic records for our serials were also stored in our cataloguing database in full MARC format. We assumed, correctly as it turned out, that the cataloguing database would serve as the basis for our next serials system. Also, Inmagic was important software for small and medium-sized libraries and we thought it would be useful to develop in-house expertise in its use.

Work was completed on the Inmagic serials system during the 1991/92 academic year (Henderson, 1992, p. 9). The finished system had comparable output to that of the earlier mainframe system. In fall 1995 we were able to provide access to the database over the FIS network (M. Misiek, personal communication, May 1996).

We gradually phased out the use of this system over the period of several years as we found it less useful once our serials information was available through an OPAC and also since it became too time-consuming to maintain. We completely abandoned it when we began work on implementing DRA for serials in 1998. A Serials Master List dated February 1995, printed in two volumes and arranged alphabetically in title order, was sent to the Library’s archives.

**Automation of Binding (1990 to present)**

Even though our earlier serials systems produced binding lists, these lists were only helpful as a tool to help locate titles during any quarter that might be candidates for binding. We still sent binding instructions on cover colour, lettering, etc. to our binder, Lehmann Bookbinding Ltd., by using a paper form sent with each volume to be bound.

I began to evaluate the ABLE/Library Binding Preparation System software used by our binder in 1990 and supervised its implementation later that year (M. Misiek, personal communication, May 1990 and May 1991). At first we output the binding instructions to a floppy disk using software which was loaded on our microcomputer. This disk was sent with our shipment of volumes to be bound. A later version of the software allowed us to connect to the ABLE software at Lehmann’s via the Internet and input our instructions directly to the binder; only the volumes to be bound travelled by snail mail to the binder. We still use this software today. It is not integrated with our ILS in any way.

**Participation in an ILS for Serials Control (1998 to present)**

Our move toward implementing a fully automated serials control system progressed slowly over a number of years and consisted of two major phases: the entry of holdings for closed titles and the entry of holdings and Kardex information for current titles. It was not possible to transfer serials information from the Inmagic system so the holdings needed to be added to our bibliographic records in DRA. Although serials was one of our first functions to be automated, it was actually one of the last to be moved onto the UTS ILS. As mentioned earlier, we first implemented
the OPAC in 1988 and circulation in 1991. However it was 1998 before we began to input our retrospective holdings into DRA. Finally in 2005 we began to move our current holdings and Kardex information into the Sirsi system.

When looking back on our decision it might seem counterintuitive to have chosen to put our retrospective holdings into the ILS before tackling the current titles. Certainly having up-to-date information on issues received for current titles would be of most use to our users. In the end, it would also reduce staff time spent on the administrative work of following up on missing issues, etc.

There were a number of factors that influenced the decision. We had no expertise with serials holdings and thought that working with retrospective holdings would be a way to begin to develop experience that would have little impact on the general work flow of the serials assistant. This was a project that I could work on alone in my spare time, if necessary, and not have much of an impact on the day-to-day work of serials. The DRA software was ageing and the expectation was that a new system would be introduced at any time. It did not make sense to learn a new check-in package that would change in a year or two. We did not know if the serials data already entered would move well to new software since it was not in a true MARC serials holdings format. Our plan was to handle current titles soon after the move to a new system. Also, although of less benefit to our users than current holdings, entering retrospective holdings was still of benefit especially for interlibrary loan purposes and when deciding whether to accept or request a donation of missing issues.

Retrospective Serials Holdings Project (1998 to present). When the University purchased the DRA system, it decided not to purchase the MARC serials holdings component. In 1998, I began to review other practices among UT libraries with respect to the representation of serials holdings information in DRA and also the various MARC serials holdings standards in the library world. Based on this review, I developed a basic MARC-like format for our retrospective serials holdings.

In fall 1998 I began to input our retrospective holdings for closed unclassified serials titles (M. Misiek, personal communication, May 1999). Initially a student verified our holdings and I rechecked the work as I input the information into DRA. This procedure proved to be slower than just doing the inputting directly from our volumes. Still work did progress and by fall 2002 the holdings for 460 titles had been completed when we paused for the move to a new system (M. Misiek, personal communication, May 2003).

In 2002 the University Library acquired the Sirsi ILS. Luckily when the bibliographic data was ported from DRA to Sirsi, our non-standard MARC serials holdings information came over also. However, we still needed to clean up the data and move it into Sirsi’s MARC serials holdings format (M. Misiek, personal communication, May 2004).

I continued to work on this project alone but regularly put in requests for funding to hire student assistance. I was finally successful in May 2006 when I was given funding to hire a student to work on the project during the summer (M. Misiek, personal communication, May 2007). In 2007, when Nadia Moro became involved in serials work, she brought her cataloguing expertise to the project and refined the procedures. A last data clean up was begun under her supervision as she trained Elisa Sze to continue the project (M. Misiek, personal communication, May 2008). Today Elisa supervises the project and the completion date is projected to be fall 2009 for our general periodical collection holdings. The retrospective holdings for our closed library annual reports remain for a later project.

Current Serials Control Project (2005 to 2008). In January 2005, after consultation with the rest of the Library’s professional staff, I began a second phase of the serials project to create serials control records for our current titles. These controls would contain information on our most recent holdings and other information from our Kardex records. Participation in the Sirsi serials system would also allow us to better track missing issues, lapsed subscriptions, and the state of our serials budget. These holdings would also appear in the OPAC along with the date for the latest issues received and, thereby, better serve our users (M. Misiek, personal communication, May 2005). At that time I estimated that we had about 750 current serials. My serials assistant also began creating controls and by May 2006 we had about 175 of the controls created (M. Misiek, personal communication, May 2006).

As Nadia got further involved in serials work she decided to tackle creating serials controls also. In preparation for this work, we reviewed all of our supposedly current subscriptions to determine which titles were definitely active, which ones could be closed, and which ones needed further research. Nadia revised my procedures and cleaned up
all existing controls. Retrospective holdings were also added for these titles. By the end of the 2007/08 academic year all of our current titles had controls and we were benefiting from having this current information in the OPAC and from improvements to and time savings in our administrative work flow. In the end about 350 controls were created (M. Misiek, personal communication, 2008).

The addition of electronic serials to the ILS involved only our cataloguing function since at this time we do not record individual issues as access is provided. The cataloguing will be covered in the Cataloguing Section of this report.

**Technical Reports**

The technical reports collection was another early candidate for automation. This was, and is, a largely uncatalogued collection. It consists mainly of technical reports in microfiche format from ERIC (Education Resources Information Center) and NTIS (National Technical Information Service, formerly the U.S. Clearinghouse for Federal Scientific and Technical Information). There are also some reports in paper format. At the beginning of this period, the two formats were treated as separate collections: microfiche reports and technical reports. Much of the literature in the late 1960’s pertaining to automation in libraries would have been covered in this collection and would, therefore, have been particularly valuable to have accessible.

When I began working in 1977 we produced batch listings for a unified Technical Reports collection in both FLS-supplied accession number and publisher-supplied document number order. As with our Serials System these listings were produced on the university’s mainframe using the Technical Reports System described below. Today this collection is still largely uncatalogued except for the paper format reports which are fully catalogued and classified with the rest of our monograph collection. Additions to the collection were greatly reduced in number in 1997 at the time that the Inforum was created. Anything added after that date has been fully catalogued. In fact, very little has been added and much of the current literature is now fully available via the web. The last listing produced was in 1996 and used the dbASE system below.

**Version I of an In-house System: KWIC Index to Technical Reports (1967 to 1971)**

This project was undoubtedly begun as a student project, one of the keyword-in-context (KWIC)4 indexes mentioned as a BLS programming project by Land (1968, p.11). I have not found mention of any student or staff involved with the project.

As with the Serials collection project, the Library needed to prepare the collections for the automation project. Luik (1968) reported on this preparation:

> For the uncatalogued technical reports, the majority of which are published by the U.S. Clearinghouse for Federal Scientific and Technical Information, we are in the midst of a program designed to give access to the reports through the use of data processing techniques. The reports are being numbered and simple cards are being produced which will be filed in a separate drawer of the public catalogue. The reports will be shelved together and located by number. In the summer of 1967, 350 microfiche were put in labeled envelopes and filed in drawers alphabetically by author. A brief author list was made. Recently they have been assigned a number and will receive data processing treatment similar to that described for technical reports. (pp. 18-19)

During the next year the information pertaining to these collections was entered into machine-readable form and a master list of the collection was produced (Luik, 1969, p. 19).

A break was taken in the processing of this material during the 1969/70 academic year as Professor Kurmey worked to develop a new format that would allow the two collections to be consolidated into one (Mann & Willoughby, 1970, p. 22). Land (1971) reported that Professor Kurmey was on leave during the 1970/71 academic year (p. iv). From the lack of information on this project after this period I suspect that the project died at about this time. During this period the School was also preparing for its move to the new St. George location and a greatly expanded data processing

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4 An example of the format for a KWIC index card can be found in Reitz (2007).
lab. In my files I found two listings for the collection dated from 1970; one list is in title keyword order and one is in SLS accession number order. These have been sent to the Library’s archives. I have located no manual for the system and do not know anything about its operation.


The earlier Technical Reports System never seems to have made it beyond the research phase. Automation of this collection found new life with the decision to have a librarian, Jan Bamford, with responsibility for data processing projects in the Library and to hire a Faculty programmer. As with the earliest Serials System, it was not possible to reuse the data from the earlier Technical Reports System that was already in machine-readable format. Mann (1973) reported on the new project:

> Again with programming assistance from Jane Yates, Jan Bamford organized the inputting of a data base for the report numbers of over two thousand reports. This file permits us to identify the existence and location of all ERIC and NTIS documents in the collection regardless of format. (p. 27)

This system was still in use when I arrived. The file was maintained on a UTCS mainframe computer. Batch programs were run quarterly using punched cards to produce annual and quarterly update listings in both publisher document number and Library assigned accession number order. Each title in the collection was represented by a brief record consisting of a Library assigned accession number, the publisher’s document number, and the date ordered or received. Both paper and microfiche reports were included. Data entry and editing was initially done using a typewriter terminal and dial-up access to the UTCS mainframe. Later we used a CRT. The last full listing of the UTCS file was produced in August 1987 after we began work on the next system. No copy of output from this system has been located.


When the Library reviewed its use of the UTCS mainframe, it was decided that maintaining a technical reports system of some kind, to provide access to an otherwise largely inaccessible collection, was still important. The dBASE III+ software running on our microcomputer could replicate the old system and handle our need to provide this access. The existing database was transferred from UTCS and converted into a dBASE III+ file in 1987.

The system was designed and programmed by myself in consultation with Lilian Chan, the technician who was to use it. It consisted of two database files: one containing the 9500 records downloaded from UTCS and the other containing the records input since Sept. 1987. The decision was made to keep the original base file from UTCS separate from future additions since the file was so large that it would take a long time to print out on the small printer attached to our microcomputer. Programs to allow for the entering and editing of brief information on each title in the collection were written in dBASE III+. As with Version II of our Technical Reports System, the information input consisted only of accession number, document number, and date received; it was decided that this information was sufficient to allow access and that no staff time could be allocated to adding additional information such as title, author, and publication date. Also, for the most part, these reports were indexed in online indexes like the one from ERIC. The brief entries indicated if the title was on order or received. The system was designed to produce three listings of technical report documents: one in FLIS accession number order, one in ERIC/NTIS document number order, and one of only ERIC documents in ERIC document number order. Each set of listing could be run for both files.

The system stopped being updated around 1996 when we greatly reduced the number of new titles being added to the collection and ceased to add any uncatalogued titles. The last full report, dated February 24, 1988, and an update, dated August 10, 1996, have been sent to the Library’s archives. When we ceased to use dBASE III+, the databases were archived to Microsoft Access in December 1999 (M. Misiek, personal communication, May 2000).

**Participation in an ILS for Technical Reports (Never)**

To this day, this collection remains largely uncatalogued and is, therefore, not accessible through the UTL ILS. With very little added since 1996 and everything that has been added given full cataloguing, it has never been deemed worth the staff time required to catalogue the bulk of this collection. These reports are accessible through indexes,
especially *ERIC*. Many of these documents are even available online and often for free. It is unlikely this collection will ever be part of an ILS.

**Cataloguing and the OPAC**

In this section I will cover the automation of the creation of bibliographic records for our collections of monographs and serials and, most recently, electronic resources and, also, our involvement in the UTL OPAC. Within cataloguing I am including the assignment of a classification number and subject headings. I have decided to ignore the creation of labels to indicate how our material will be shelved. The inventory of our collections will be briefly covered later in the Circulation Section.

My recollection is that when I came, we input our bibliographic information to the UTLAS CATSS system via a typewriter terminal. We received cards as output. These cards were filed into our card catalogue and shelf list. UTLAS kept our records in our own section of their database. Bibliographic records could be derived from other records in the UTLAS database or from LCMARC tapes loaded by UTLAS. Additional bibliographic information to assist with cataloguing, such as records for British titles or name authority information, could be found by using such print tools as the *British National Bibliography* or the *National Union Catalog*. We had a separate shelf list in card format that we used to avoid duplication in the assigning of call numbers and as a paper record of the titles in our collection. We also had a name authority and subject heading file on cards; we had to type these cards using a typewriter. (N. Moro, personal communication, August, 7, 2009) Today we use *Sirsi* for the creation and maintenance of our bibliographic records and no longer have any paper output. *Sirsi* also provides our OPAC and an online shelf list. We have online access to a number of bibliographic databases such as OCLC *WorldCat* for deriving bibliographic records and for name authority work. We also often still use the paper forms of tools that assist in cataloguing, like the *Dewey Decimal Classification* for our classification numbers, Cutter-Sanborn Table for the assignment of the Cutter part of our call numbers, and *Anglo-American Cataloguing Rules* to standardize the form of and provision of access points for the items in our collection, even though these tools are now available in online form.

As systems librarian I was less involved in the development of systems for cataloguing purposes than for the functions mentioned in the earlier sections. Originally I was not intending to cover this function in great detail at all. However, the *Annual Reports* cover so much of the earlier years that I decided to summarize them and supplement the later years from brief notes in my files as much as possible. Also, a history of automation without a major section on Cataloguing would be sorely deficient since so much of our current ILS and access to our collection relies on it. The history of this Section may need further supplementing by our cataloguer at his retirement. The one area that I was most involved with was the production of a book catalogue for our SAS collection.

**Possible Beginnings (1968 to 1970)**

The early days of automation of the cataloguing function are vague. Certainly early research at SLS involved the creation and manipulation of bibliographic records. For example, Kurmey (1970) reported that:

A series of programs were developed to manipulate and list bibliographic records in MARC II communications format using a weekly tape supplied to the University of Toronto Library by the Library of Congress and copied for SLS use. Utility programs to transfer MARC records from tape to disk and from disk or tape to printer were developed. *. Additional projects include: Serials check-in and file maintenance; investigation of the frequency and nature of changes made to bibliographic records; conversion of full card catalogue data to MARC II communications format; continued testing of file organization methods for bibliographic data. (pp. 38-39)

Mann (1970) also mentioned in this same annual report that “It should be pointed out that machine-readable records exist for all materials catalogued by the Library from October 1968 to date; this forms a valuable data bank for experimental purposes” (p. 21). However, I could find no earlier description of a project involving the creation of this database. Luik (1968) specifically mentioned in an earlier report that once pre-cataloguing searching has been completed, “the main catalogue card is retyped for Xeroxing” (p. 18). The reference is specifically to typing and not key-punching.
In the next annual report, Luik (1969) also described as an innovation “The production of a monthly Recently Catalogued Materials list by mechanised methods, distributed to those U.S. library schools from which we receive acquisitions lists, and to those Canadian library schools which indicated an interest in receiving the list” (p. 18). But again, it is not clear what exactly is meant by mechanised methods. Both the preceding and succeeding entries in the same section of this annual report specifically mention either data processing methods or key-punching of data so I suspect that mechanised actually means produced by something like photocopying of catalogue cards that have been typed rather than printed from data in machine-readable format.

I vaguely remember seeing issues of Recently Catalogued Materials but cannot locate them now. I do know that this publication was not produced for very long and may have been superseded by the New Acquisitions List discussed in a later section.

**In-house Library Catalogue Input System (1971 to 1976)**

The first recorded project to automate the cataloguing function that I could locate is mentioned by Mann (1971):

Another major project involved the in-putting of main entry catalogue cards into machine-readable form using IBM 2741 terminals. Professor Ann Schabas, Mr. Gene Damon, the Administrative Assistant, and the Chief Librarian worked together during April to design the project. Once the flowcharting and programming had been completed, two supervisors and four typists were hired for the months of May and June. Unfortunately, delays and difficulties with equipment installation prevented us from having as much time on the terminals as we had planned. The slow start was disappointing but when this phase of the project is completed, approximately one-third of the our main entries will have been inputted, complete MARC tags, quite an achievement in itself. (p. 35)

Another comment earlier in the same annual report indicates that the purpose of this project may actually have been to prepare for the “prospect of an automated circulation system” (Land, 1971, p. 16) and not to streamline the cataloguing process. It is interesting to note that this project does not make any reference to an earlier catalogue input project.

Although this project was begun in 1971, it is, in many respects, a research project since Professor Schabas was a participant and neither Jan Bamford nor Jane Yates was involved. It extended into what I am calling the applied phase but was never really completed and was in many respects still a research project since the editing function was never completed.

Work progressed as planned. By the end of the next academic year, one third of the main entries in the card catalogue had been input using this system. As Mann (1972) reported:

Last summer the first third of the card catalogue was input into machine-readable form using a conversational program at IBM 2741 terminals. The file has been kept up-to-date with regard to additions, changes and deletions, and some experimental formatting and sorting programs have been developed. As yet it is not possible to edit records in an on-line mode but work will proceed with this goal in mind. The raw data has been used for curriculum purposes in the data processing courses. It is hoped that in the near future sufficient resources will be available to permit continued input and experimentation. With research and testing much could be learned about the advantages and disadvantages of automated cataloguing procedures. (pp. 47-48)

References to the “first third” of the catalogue were most clearly explained by Henderson (1974) where she explicitly stated that “The catalogue assistant continued to input, into our machine stored data base, catalogue data for main entries falling in the A-D section” (p. 17). It seems that additional resources did not materialize because for several years, it was reported that this A-D section was maintained but never expanded. A memo from my predecessor, Rosemary Tessier (1976) reported in January 1976 that:
The conversion project was started at FLS and the section of our card catalogue covering A through D was converted to machine readable form. To date, the Library has input all new cataloguing of main entries from A through D and has kept track of all changed made to cards in this section. The system has never had an edit program; consequently, all records exist as originally input. (p. 1)

The reference to the file being “kept up-to-date with regard to additions, changes and deletions” (Mann, 1972, p. 47) seems to have been a bit misleading because, in fact, the editing component was never completed. The Library tried to continue to input new titles that fell in the A-D section of the card catalogue, but the lack of an editing program meant that it was very cumbersome to maintain a record of changes that needed to be made to the existing records. Any needed corrections to these records were kept in various manila folders and binders in case the capability to edit them was ever developed. Almost 6000 records had been input using this system. It is worth noting here that the serials records existed in a separate MARC-compatible database developed for the Serials System. The use of this Library Catalogue Input System was discontinued in 1976 when discussions about the development of an automated cataloguing system began (Tessier, 1976). No output from this system has been found.

**Catalogue System Study (1975 to 1977)**

With the first Library Catalogue Input System incomplete, a study was begun on the feasibility of either acquiring or programming an automated cataloguing system. The first phase of this study involved a review of our manual procedures. Henderson (1976) reported on this review:

As part of the investigation of the feasibility of an automated catalogue system, Rosemary Tessier with Janet Higinbotham and Helmi Kareda carried out an analysis of existing manual procedures, timings and costs of the cataloguing and processing operations. The information derived from the study will serve as a basis for comparison with procedures and costs of an automated system. It is proposed that the Library may begin soon to build a machine readable data base of bibliographic records which will be of benefit both to the Library’s day-to-day operation and to the Faculty’s teaching program. (pp. 21-22)

In other words, the earlier Library Catalogue Input System was not seen as serving as the basis for this database in its existing state. The next phase of this study involved a review of the existing automated system and the Library’s future needs for an automated cataloguing system. The results of this phase were presented by Rosemary (Tessier, 1976) to the faculty for comments and support. The notes, dated January 15, 1976, from this session have been sent to the Library’s archives. At that time completing the existing system was still a possibility. It is worth mentioning here that, given the existing technology at the time, the Library desired a system that would allow for the creation of a database of bibliographic records to be stored in MARC format and an automated authority file subsystem. The system on which this database was created would also produce catalogue cards, lists of newly catalogued titles, and, ultimately, a book catalogue of our collection. The possibility of an online catalogue was not yet envisioned, but the use of the database as the basis for an automated circulation system was.

It seems that some initial work was done on a new in-house system because preliminary specifications were found in the files for the Library Input Processing Subsystem (LIPS). LIPS was developed to provide “data entry facilities for library bibliographic data in virtually any defineable MARC or MARC-like format” using the PORK system with Edit Bee CRT terminals for data entry ("Library Input", 1977, p.1). I have been unable to find out about the PORK system but think that it ran on the Faculty’s minicomputer. This document has been sent to the Library’s archive.

**University of Toronto Library Automation Systems CATSS (1976 to 1992)**

In the end, the second in-house system, LIPS, was never completed. Henderson (1977) reported that the Library decided:

... to participate in the University of Toronto Library Automation Systems (CATSS) automated catalogue system. The decision to ‘go on-line’ with CATSS was made following last year’s study of our manual system and comparison of its costs and estimated costs of CATSS data input. Our first eight months experience on the system has verified our original estimates regarding costs and times required for various procedures. The major benefit is the building up of a machine readable data base which will open up future options for a variety of products. Immediate benefits from CATSS are access to MARC records for cataloguing copy,
reduced searching time, and computer production of ready-to-file catalogue cards which has reduced typing and filing time substantially. (p. 39)

The records from the Library Catalogue Input System were kept but could not be used as the basis for the new database; they would need to be re-input at a future date. Records were input to CATSS for newly acquired and recatalogued titles; the database slowly grew from scratch. Henderson (1978) reported on its progress:

This has been the first full year of Library use of CATSS, the University of Toronto Library automated cataloguing system. By the end of the academic year almost 3000 records had been entered into our database, and computer generated cards had been received and filed. The number of machine readable records now represents over 5% of the Library’s total monograph titles. While most items entered are new items, any recatalogued items are also entered, so that the size of the data base is increasing somewhat faster than the number of newly catalogued items. It is expected that some retrospective entering will be done as time becomes available. (p.31)

By 1984 Henderson (1984) reported that “our CATSS data base now totals about 15,000 records” (pp. 10-11). The CATSS system allowed us to create our own database that could be exported at any time in MARC format. Through CATSS we had access to both the Library of Congress and National Library of Canada bibliographic databases that could be used to derive our own bibliographic records. Access was also provided to the Library of Congress name authorities and subjects (Jones & Browning, 1988, p. 93).

**Online Catalogue Preparation (1976 to 1988)**

As soon as we began to put our records into the CATSS database, cataloguing staff were able to search online the database of records for our collection that had already been input before adding new records; reference staff could also have access to the database through the REFCATSS system. However, during this period, the rest of our staff and our users had to rely on the card catalogue for access to our collection. It took many more years before our users could have online access. Additional access was provided in stages. Some of these stages were obvious to our public and some only happened in the background.

**CUC (1976 to present).** UTL maintained a union card catalogue so that all users could search the catalogues of all of the libraries within the university together to facilitate location of needed titles. This catalogue was very cumbersome and labour-intensive to maintain and also took up a lot of space in the Reference area of the Robarts Library. Blackburn (1989, p. 292) described UTL’s project to convert all of its collection into machine readable format; this project was completed in 1975. Since UTLAS did not yet have a viable OPAC, UTL decided to produce a COM (computer-output microfilm/fiche) catalogue. The UTL part of the union card catalogue was closed in June 1976 and a COM catalogue was produced in its place. However, cards continued to be added to the union card catalogue for the other UT libraries. Since UTL no longer filed its own cards into the union catalogue it wished to get out of maintaining the card catalogue altogether and so began discussions with the other participant libraries about closing the union catalogue (Henderson, 1977, pp. 39-40). We participated in these discussions and finally became a participant in the new group to create a Campus Union Catalogue on the CATSS system. As reported by Henderson (1979):

In October the Library became an active participant in the Campus Union Catalogue “consortium” of users of the CATSS system. This group was formed when the University Library closed its catalogue in 1976. At that time contributors to the campus card catalogue were invited to form a group to contribute to the computerized catalogue. We participated in the discussions and decisions of this group from its beginning, but because we were already a separate user of the CATSS system, we delayed actual entry into the Campus Union Catalogue until this time. We anticipated that active participation in the CUC would take a good deal of staff time, particularly in bringing our records into line with the University Library’s authority file. This has proved to be the case, and our cataloguing production has been significantly reduced because of the amount of time required to check and adjust our entries. (pp. 20-21)
As it turns out, our participation in the CUC consortium was the first stage in our journey to an OPAC. Working toward an OPAC with many other libraries, as at UTL, meant that all participating libraries needed to adopt the same cataloguing standard, name authorities, and subject headings. Without this standardization, searching would be very difficult and confusing for users. Participation in CUC meant that we agreed to conform to the standard at UTL. We needed to ‘normalize’ our records with those of the UT library community. As explained by Henderson (1980), this took more staff time to change our records and cataloguing practices but we also benefited from being able to derive records from the vast UTL database (p. 16). Luckily one thing we did not need to standardize was our use of the Dewey Decimal Classification for our call numbers even though most of the rest of the university used the Library of Congress Classification system. This stage on our journey to an OPAC was hidden from our users.

Since many of the participating libraries had their own CATSS databases, duplicate and often different records existed in the new CUC database. These duplicate records continued in database for many years as CUC continued to work toward the creation of one bibliographic record for each title added to the collection and, at a later date, toward the concatenation of pre-existing records into one bibliographic record per title.

COM fiche catalogue (1976 to 1988). Once we began participating in the CUC our titles began to appear in the UTL COM catalogue (Henderson, 1979, p. 21). Now our users finally had the benefit of being able to search the entire UTL catalogue, including our collection, at one time. And, because we had a copy of the COM catalogue at FLIS, they could finally do this from our Library.

Even though we had a union catalogue, each participating library still had its own records in the CATSS database and, therefore, in the catalogue, so there could be several, or even 10 or more, records for any one book. It was a bit confusing for our users but still better than a union card catalogue in only one location. As Blackburn (1989) reported “Most readers preferred the COM catalogues from the start, and the others discovered before long that the card catalogues, though still in place, were increasingly out of date” (p. 292).

There were also several other negative aspects to the COM catalogue. Since it was not possible to standardize all records immediately upon joining the CUC, users might need to check several variations in an author’s name or of a subject heading when doing a search in the COM catalogue. Of course there was no circulation module so users could not tell if a book was actually on the shelf. With respect to the FLIS Library, our acquisitions orders were not incorporated into this catalogue. We continued to maintain our card catalogue during this period.

SAS Book Catalogue (1976 to 1982)

At the end of the 1975/76 academic year, the Faculty and Library accepted a gift of the Bibliographic Systems Center Collection from the School of Library Science of Case Western Reserve University. This was a major historical and current collection of classification schemes, subject heading lists and thesauri (Henderson, 1976, p. 20) which was originally begun by the Special Libraries Association. We renamed the collection the Subject Analysis Systems Collection (SAS).

The collection arrived, during the next academic year, with its own book catalogue of the titles in the collection (Henderson, 1977, p. 37). Soon after receiving the collection we began plans to produce a new edition of the book catalogue, the 7th edition. As with many of our projects, this was multi-phase undertaking. The project was described by Henderson (1978):

A by-product of recataloguing the [SAS] collection will be a book catalogue, to be printed from the machine readable data base, and to be published as the 7th edition of the bibliography of the collection. Rosemary Tessier is project coordinator, assisted by a library technician; specifications for the book catalogue were designed by Marte Misiek. (p. 31)

Phase 1 involved assigning subject headings to over half of the 1700 titles in the collection. This phase was accomplished by the end of 1976 (Henderson, 1977, p. 37).

Phase 2 involved recataloguing the entire collection and integrating the Library’s own holdings of subject analysis schemes with the original SAS collection. CATSS was used to create the bibliographic records for this collection in machine-readable form. As reported by Henderson (1979)
By the end of June the majority of items in the original collection received from Case Western Reserve in 1976 had been recatalogued and entered into the database. ... The thesauri and subject heading lists in the general collection have been transferred to the special collection and the transfer of the classification schemes is in progress. (p. 21)

Phase 2 was completed when the remainder of the classification schemes were transferred from our collection in the 1979/80 academic year (Henderson, 1980, p. 18).

Phase 3 involved the creation of a book catalogue from these machine-readable bibliographic records. The main section of the book catalogue was to have a classified arrangement with full records for each title in the collection. Additional access was to be provided with name/title and subject heading indexes consisting of brief entries. Work was begun on the programming by me in 1978 (Henderson, 1979, p. 21). Unfortunately work on the book catalogue did not progress smoothly due to the pressure of other work, including introducing and developing new programs for our microcomputer. Henderson (1983) reported on the progress of this phase:

The first full listing of the Subject Analysis Systems computerized catalogue, derived from our CATSS database, was run in late spring 1982.... We anticipate publication of the catalogue, updated to June 1983, in some form Ð in microform it not hard copy Ð in the coming year. (p. 22)

As work continued it seemed more feasible to produce the catalogue in COMfiche instead of paper format. Completion of the book catalogue was continually delayed and, in the end, abandoned altogether. Once the UTL OPAC came up in 1988 the need for the catalogue had passed. An undated classified arrangement with indexes but no program listings was found and sent to the Library’s archives. This listing contains entries for 100 titles from the SAS collection and was probably produced in October 1982.

The SAS collection still remains at the Library but very few titles are added to it today. It is fully searchable as part of our OPAC.

**Cataloguing Workstation (1984 to 1992)**

Initially when we began participating in the CATSS system, bibliographic data entry and editing were done by using what used to be called a “dumb” terminal. Soon after we acquired our first microcomputer and modem we saw the possibilities of using it for our CATSS work. When we acquired a second microcomputer we were able to set it up to access CATSS II as an intelligent workstation for online cataloguing (Henderson, 1985, p. 6).

Although the CATSS system allowed for the creation of a bibliographic database that could be output in MARC format and the production of cards for our catalogue, it was still lacking several things that were important to the cataloguing process. Name authorities and Library of Congress Subject Headings were still searched against our paper card file. We then searched for updates and names or subjects not already established in our paper file through, in the early days, our paper cataloguing tools like Canadiana, and then, in the later days after publication formats had changed, through these tools in microfiche. (N. Moro, personal communication, August 7, 2009) After the Library of Congress started issuing some of its databases on CD-ROM, a CD-ROM drive was added to the microcomputer to provide greater functionality for our cataloguing staff. During the 1989/90 academic year it was possible to provide the cataloguing staff with a workstation in their own area (M. Misiek, personal communication, May 1990). Finally in 1991, the cataloguing workstation was upgraded to include a CD-ROM minichanger. This was a juke box style CD-ROM player that could hold six CD-ROMs; these CD-ROMS could be searched serially. Henderson (1992) described this workstation in greater detail:

A workstation for cataloguing staff, composed of microcomputer, CD-ROM minichanger, modem and printer, was installed in spring 1991. CD-ROMs for LCName Authorities and LCSH are mounted on the workstation and provide major new tools to reduce authority searching time and increase productivity. Access to source files has raised the proportion of derived cataloguing to 60% of our total; however, the volume of original cataloguing is still higher than the average library because of the large proportion of research materials acquired. (p. 7)
Both of the people working in the cataloguing section shared this one workstation. The use of this workstation continued until 1992 when our CD-ROMS were loaded on the FLIS LAN.

**RECON**

Our initial project to create MARC records was actually undertaken with a circulation system in mind. As reported by Land (1971), "With the prospect of an automated circulation system, a project was undertaken in April 1971, to create machine-readable records for all the main entries in the catalogue, complete with MARC tags, by using IBM 2741 terminals" (p. 16).

However, although this database was created with MARC tags, we were never able to edit it. In the end, we re-entered all of this bibliographic information when we began using the CATSS system in 1976. We started by only entering bibliographic information for newly acquired titles or for those needing editing changes. Work progressed slowly until 1985 when gifts from a retired faculty member and alumni funded a major part of a RECON project (Henderson, 1992, p. 7). RECON projects were common in libraries during this period. A RECON project was one to RETrospectively CONvert the card catalogue to online database records. Henderson (1986) provided a more detailed description of this project:

A RECON project to complete the conversion of our card records to machine-readable form was begun in early 1986, funded by a contribution from the Faculty’s private funding. The Project was planned and organized by Joe Cox who prepared detailed cost analyses for various approaches. The most economical method for us, using the UTLAS ReQuest system and having student assistants search in-print sources, proved to be highly efficient. In Phase 1, remaining card records for titles in the Reserve collection and records with 1968-1976 imprints in the Dewey ranges 000-090 and 650-699 with LCCNs or ISBNs were input on floppy disks for matching against the ReQuest file. Of these 5000 titles, about 3200 “hits” were found. Editing of these records by a trained student assistant was begun in the spring with completion expected by late summer. Of some 40,000 titles held, about 60% are now represented by machine-readable records. Samples of circulated material suggest that this level will be adequate to support about 90% of use. (p. 9)

Phase 1 of the project was “completed in 1987, when all FLIS records with imprints from 1968 had been converted to machine-readable form.” Any additional titles were converted to machine readable form and barcoded and linked as they circulated in the automated circulation system as part of our regular cataloguing workflow (Henderson, 1992, p. 7). The RECON project continued even after the freezing of our card catalogue in 1993 (Henderson, 1994a, p. 3). It was considered complete in 1995 and led to the dismantling of the card catalogue in fall 1995 (“FIS Library”, 1996, p.5).

**Participation in an ILS for Cataloguing Support and the OPAC (1988 to present)**

The full implementation by the Library of an ILS for cataloguing support and OPAC took place over a number of years. I have arbitrarily broken this implementation down into these five phases as covered below.

**Phase I: OPAC**. As discussed earlier, we continually re-assessed our options for an ILS including electing to participate in the UTL ILS once it was implemented. Initially UTLAS was developing an in-house ILS, but in 1988 it acquired the T/Series 50 Circulation System and Online Catalogue from Dataphase (Saffady, 1993, p. 69). Soon after this acquisition, UTL began to implement the OPAC component in February 1988 ("UTL inaugurates", 1988, p. 1). This OPAC became known as ‘Felix’. As explained by Henderson (1992), "the FLIS Library took part in the first expansion of Felix in the spring of 1988. Access to the vast holdings of the campus libraries and additional retrieval capability have been positive features of Felix, but it could not be improved to the level of the current leading OPACs” (p. 7).

**Phase II: Cataloguing Support**. While we were using the T/Series 50 system for our OPAC, we still used CATSS as our system for entering bibliographic data into the database used for the OPAC. In 1991, UTLAS, Inc. sold the T/Series 50 system to CARL Systems, Inc. (“CARL Systems”, 1991, p.1). Even before the sale, UTL had already begun to look
for another ILS with improved functionality. ("Task Force", 1991, p. 1). This extensive search led to the acquisition of
DRA in 1991 ("DRA chosen", 1991, p. 1) and its implementation in August of the next year. As reported by
Henderson (1992), "To enhance catalogue access, the DRA system was acquired by the Central Library and in
August 1992, a new OPAC, UTCat was introduced. More powerful in every way, it has already won praise and
acceptance from users" (pp. 7-8).

With the acquisition of this new system, UTL and the FLIS Library began to use the cataloguing support component
of DRA and to cease using the CATSS system ("The FLIS Library’s", 1993, p. 7). Our cataloguing function was now
part of the ILS.

Phase III: Closing the Card Catalogue. Once we left CATSS we lost the ability to produce catalogue cards since DRA
did not include this function (M. Misiek, personal communication, May 1993). After reviewing our options, we decided
to neither acquire nor develop in-house card production. Instead we decided to ‘freeze’ our card catalogue in 1993
and rely on the OPAC for access to our collection. At the time that the catalogue was frozen,

... a very large percentage of the collection is in the OPAC - about 90% of the general collection, over 60%
of periodicals and microfilms, all of the SAS collection and about 25% of the children’s collections. Overall
the majority of the most important parts of the collection are available on the OPAC. ("The FLIS Library’s",
1993, p. 7)

Since we did not join the acquisitions module until 1997, once the card catalogue was closed we lost the ability to
include information for the titles we had on order or received in the same location as our current library holdings. We
removed our order slips from the card catalogue and began work on the networked dBASE IV database described in
the Acquisitions Section below ("The FLIS Library’s", 1993, p. 7). For several years our users were without access to
our on order and received titles until this database was completed.

As mentioned above, three years later, in the summer of 1995, we finally emptied the card catalogue and removed it.
The cabinet was donated to another library ("FIS Library", 1996, p.5). The purchase of furniture for the space formerly
occupied by the card catalogue was partially funded by a sale of drawers of cards from the catalogue to faculty
members, staff, and students ("Your Library", 1995, p. 19).

Phase IV: Cataloguing Internet Resources. In 1994 we undertook the Electronic Resources Project (ERP). The
project as a whole will be discussed in greater detail in a later section of the report. One component of this project
involved investigating the feasibility of cataloguing Internet resources & developing procedures for creating their
bibliographic records. As described in our report to the FIS community on the 1995/96 academic year:

A major element of the ERP, Joe Cox has led the campus in the theory and practice of cataloguing of
Internet resources. Beginning with Internet resources archived at FIS, we have created records in UTCat for
over two dozen electronic journals. The bibliographic records include the 856 MARC field which provides a
“hot link” between the web catalogue and the electronic full text on our Web site. ("FIS Library", 1996, p. 5)

We were the first library at UT to catalogue Internet resources and create these "live links between the bibliographic
records in UTCat and the actual documents" ("Cataloguing Internet", 1995, p. 1). And, in the process, we were the
first library to provide access to Internet resources through the UTL ILS.

Joe’s early work on this project led him to continue to develop expertise in this area and to share his expertise outside
of the Faculty.

As part of the “outreach” of the FIS Library, Joe has given several workshops and tutorials to campus library
staff; and most recently over 80 registrants attended a half day session on March 15. As well Joe, Dean
Howarth and Trina Richard have given continuing education programs on cataloguing Internet resources,
including the first ever University of Toronto continuing education video. ("FIS Library", 1996, p. 5)

His further work on cataloguing of Internet resources grew into a larger project that involved additional institutions,
such as A-G Canada, Ryerson Polytechnic University, and Hamilton Public Library, to name a few. This larger project
resulted in a manual on cataloguing these resources, Cataloguing the Chameleon (Cox & Dekker, 1999). He also
collaborated on an even larger and related research project, The Bibliographic Elements and Displays Research Project, with Prof Joan Cherry as Principal Investigator and Dean Lynne Howarth as Co-Investigator. Additional information on these projects can be found in Cherry & Cox (1996), Cox (1996), Howarth and Cox (1996), and Campbell and Cox (1997).

Phase V: Closing the Shelf List. Even after we moved to DRA we still continued to maintain a shelf list in card format. DRA did not have a good enough shelf listing function to suit our needs so we continued to produce shelf list cards by writing brief entries for each title on cards by hand. Finally, when we moved to the Sirsi system in 2002 we gained a decent shelf-listing function. After several years’ experience, we finally ceased to add shelf list cards for the main stack collection and moved most of the shelf list cabinets into storage in 2007. Currently we still maintain shelf lists for some of the smaller collections like the periodical collection (N. Moro, personal communication, August 7, 2009).

Xerox Files

The Xerox File collection consists of photocopies of periodical articles; most of these are in multiple copies. The titles included in this collection are selected from articles cited on the current reading lists for our courses. The collection is arranged alphabetically by the author’s last name in vertical file cabinets. Since, our periodical collection does not circulate, the Xerox File collection allows students to borrow course readings for short term loans of two days and also protects our journals from repeated photocopying of the same readings by students.

When I came there was a KWOC index to the collection produced using the university’s mainframe computer. Two small drawers contained 3” by 5” index cards. Each of these cards represented an item in the collection and were filed alphabetically by author’s last name. This file was only accessible by Library staff. Today, each of the titles in this collection has a brief catalogue record in the UTL ILS and is searchable along with the rest of our collection.

KWOC Index to Titles: (1971 to 1987)

The mention of a journal article database by Kurmey (1969, p. 34) led me to believe that an early student project involved the Xerox file collection. It would have been an obvious candidate since the access provided for this collection was so poor. There seems to have been no list of the articles in the collection. The only access was by author listed on a current reading list. However, I could find no further mention of the automation of this project in the Annual Reports until Mann (1972) reported on the state of the collection as a new project was begun. She said that “Until the present time the only access to this valuable and expensive collection of copies of periodical articles has been by author listed on current reading lists” (Mann, 1972, p. 46-47). It seems that the earlier project did not utilize our collection.

The programming for this collection actually began during the applied phase of automation in the Library and involved both a librarian and the Faculty programmer. The project was coordinated by Liz Avison, Assistant Librarian (Circulation and Reference), and the programming was done by the Faculty’s programmer, Jane Yates (Mann 1973, p. 26-27).

Editing of the records began during the 1971/72 academic year (Mann, 1972, p. 46). The collection was an expensive one to create and maintain in terms of staff time to locate and copy the articles and, therefore, was deemed to be worthy of better access to try to increase usage by students. Mann (1972) further described the project by reporting that:

The objective of the present project is to produce a master file which can be edited and updated in an on-line mode and to provide varied access by title key-word, relationship to courses in the curriculum, and date added to the file. This improved access should lead to a substantial increase in the use of the materials in the file. (p. 47)
The keyword index was actually a KWOC (KeyWord Out of Context) index; this index was in a different format from the KWIC index originally produced for the Technical Reports collection\(^5\). The work on the project was completed during the 1972/73 academic year. Mann (1973) reported that "This was a valuable experiment and experience for the Library and demonstrated how machine indexing can be used to produce better access for users" (p. 27).

The KWOC Index was seen as a means to provide both title and subject access by using only the key words in titles. In addition to the KWOC Index to Titles, the system also produced two additional listings: a listing of all titles in the Xerox File collection in main entry order and a listing of records entered within a particular date range in main entry order. As with our other systems from this time period, the programs were run on and the data was stored on the UTCS mainframe computer.

No listings from this system were found by me during my clean-up.

**Transition from Mainframe to Microcomputer - Xerox Files using dBASE III+ Software (1987 to 1992)**

We reviewed the KWOC Index to Titles system when we reviewed all of our mainframe-based systems as we phased out our use of the UTCS computers. After consultation it was decided to discontinue this system because:

- The KWOC listing is not particularly useful to our patrons.
- The system itself is out-of-date and we do not foresee that there would ever be time to make it more useful.
- The system is a drain on our UTCS budget at a time when all unnecessary expenses are begin examined.
- We could do something more useful on the library’s own microcomputer system.

It was determined that it would be cheaper to re-input the Xerox File information from scratch than to transfer the database. The last batch programs were run in February 1987 (M. Misiek, personal communication, February 16, 1987).

A dBASE III+-based system was developed in 1987 to replace and improve upon the KWOC Index. It consisted of three databases: a small initial database for the new titles as they were entered, a holding database for the records until editing was completed, and an archival database for the completed records. From these databases it was possible to enter new titles; to edit or delete titles, to produce edit lists that could be taken to the stacks to allow for easy collection of the articles to be photocopied for the collection; and to print labels for the manila folders that held the Xerox file copies and for the index card file. The system was programmed by myself in consultation with Ellen Jones, Reference Librarian, and Kim Gallant, Circulation Supervisor. (M. Misiek, personal communication, November 26, 1987). No output seems to remain from this system. My notes do not indicate when we stopped using this system but my guess is that we continued with it until we began using DRA in for circulation in 1992.

**Participation in an ILS for Xerox File Collection (1992 to present)**

Our original circulation system using the T-Series 50 Automated Circulation System could not handle our Xerox File collection records. We considered phasing the collection out when we automated the rest of circulation but in the end continued to maintain it as a separate system because a proposed course reading package replacement was not acceptable to enough faculty members (M. Misiek, personal communication, February 11, 1991). We were finally able to more fully automate this collection when the University moved to the DRA system in 1992. This system featured "a more extensive reserve book room capability" ("DRA chosen", 1991, p. 1). In DRA and again in Sirsi, brief records can be created for our Xerox File titles and included in the reserves module so that these Xerox file titles are searchable in the OPAC and can be circulated through the ILS.

**Online searching**

Within the Online Searching Section, I am including the searching of any external bibliographic or reference databases; the development of and the searching of our OPAC has already been covered in an earlier section.

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\(^5\) An example of the KWOC index format and a comparison with the KWIC index format can be found in Reitz (2007).
When I came in 1977 there was no online searching provided at FLS. Searching for things like relevant journal articles for research or teaching purposes was done by searching our printed indexes, such as *Library Literature*. It was necessary to search these indexes year by year and note relevant citations on paper whether doing a comprehensive search to create a bibliography or to locate a specific article. We also had a paper reference collection to answer reference questions and relied on other library collections like the one at Robarts to answer questions outside of our subject areas. Today virtually all searching is done online by using various electronic indexes and databases and online reference tools in a myriad of subject areas, all provided via the UTL e-Resources web site, or by using Internet search engines like Google. There is very little need for any paper reference tools.

**Early Years (1978/79 to 1983)**

The Library and its reference librarian Ellen Jones were actually the early adopters of online searching within the Faculty. Our bibliographic searching service began during the 1978/79 academic year (Henderson, 1979, p. 22) on a typewriter terminal that accessed remote online databases in dial-up mode by modem. Initially this terminal was located in room 224. The service only continued to grow after that date with Ellen doing searching for faculty members and non-FLS users on our own terminal. As Henderson (1980) reported in the following year:

For a second year, the Library offered online searching services to its users and experienced a substantial increase in the number of searches done for faculty and other users. Searches performed for faculty and for library purposes are covered by a fund allocated for this service; searches performed for others are charged on a cost recovery basis. For non-FLS users this includes a fee for the time of the search analyst as well as online costs. The typewriter terminal acquired for the Library has helped to ensure availability of terminal access and efficient use of staff time. Ellen Jones is the Library’s search analyst and has developed expertise in the major online systems. (p. 17)

Ellen also began to provide demonstrations for students (Packer, 1980, p. 3). At that time online searching was not covered as part of the regular FLS curriculum so she taught a continuing education course on searching in the next year. Packer (1981) described this course:

During the Spring Term 1981 the Faculty presented “Online Search Strategy: A Course for Beginners”, with instructor Ellen Jones, Librarian, Faculty of Library Science. Designed to familiarize participants with the techniques of online searching as a tool for information retrieval, and offering hands-on experience, this 12-hour course was given during the latter part of April. (p. 6)

**Staff Microcomputer (1984 to 1992)**

The use of our online search service continued to grow. Within several years of its introduction, the Library purchased its first microcomputer. After implementing various word processing, spreadsheet and data processing applications, our thoughts turned to improving the search service. We acquired a modem and began using the computer as an intelligent terminal to connect to online databases (Henderson, 1985, p. 6) thus replacing our old teletype terminal. The use of the microcomputer allowed for the downloading of search results and the ability to create bibliographies without re-keying the data. This new tool greatly speeded up the production of search reports for the updating of faculty reading list updating and for bibliography creation. Henderson (1984) reported that “We prepared 29 specialized bibliographies and made 267 online searches” (p. 11).

Finally our most important library science index, *Library Literature*, came online in October 1985. This occurrence meant that all of the major databases in our subject were now available for online searching (Henderson, 1985, p. 5) and an increasing volume of our searching was done in online rather than in paper. Henderson (1986) summed up the situation nicely:

For several years we have offered FLIS students professional online searching at cost by Ellen Jones and now also by Jean Wheeler, and have generated steady but manageable use of the service. In fall 1986 we experienced a large increase in student demand for online searches and professional staff were unable to satisfy all requests. Much of this demand was generated for literature searches for first-year essays, but a
substantial number of second-year students also opted for the benefits of an online search. To help relieve demand in the second term, Ellen Jones trained a group of second-year students (some of them with searching experience) as volunteer searchers to assist professional staff with searches, especially for first-year students. This successful process, modified by our experience, will be followed again next year. We continue to use Dialog most heavily, but are also using Wilsonline and RefCats for reference questions and preparation of bibliographies. As online databases become more and more pervasive, an increasing volume of literature searching will be done in online rather than print sources, and end-user searching will be increasingly common. (pp. 9-10)

Public micro (1987 to 1992)

Up until this point all of the online searching offered in the Library involved staff performing the searches and students observing the process. Students were able to do some online searching outside of the Library for educational purposes in subject specific courses or if they could pay the online searching access fees and hourly rates, but they continued to be limited to searching in paper indexes within the Library itself.

Because our search service was so heavily used, in 1986 Ellen began training students to perform some of the searches for other students under her supervision (Henderson, 1986, p. 9). Although these student searchers worked on a voluntary basis, they were able to greatly increase their experience in searching and also develop skills in negotiating reference questions because of their work for us.

This situation changed in the spring of 1987 when the Library received a gift of a CD-ROM workstation. The H. W. Wilson company offered this workstation to all ALA accredited library schools to promote the use of their new CD-ROM products. As Henderson (1992) reported:

In the spring of 1987 we received a gift of a CD-ROM workstation from the H.W. Wilson Co., the first such workstation on campus. It was an immediate success. It has made database searching more powerful and convenient for our students, faculty and other users of the Library. In addition, we were able to offer demonstrations and advice to many area librarians who wanted to evaluate CD-ROMs for their libraries. (p. 8)

Since this workstation was from Wilson, Library Literature was the first CD-ROM that we offered on it.

This workstation was a standalone workstation located in the public area of the Library. It did not have dial-up access but did have a CD-ROM drive. We had a number of databases on CD-ROM; students could borrow these from the circulation desk and use them on the workstation. Over time we increased our database selection to include such products as:

- Bowker’s *Library and Information Science Abstracts Plus* (LISA)
- Silverplatter’s *Information Science Abstracts* (ISA)
- *Computer Select*
- *ACM Computing Archive*
- Bowker’s *Books in Print Plus*
- Dialog On-Disc’s *ERIC: Educational Resources Information Center*
- Library of Congress’s *CD-MARC Names and CD-MARC Subjects*

Our students greatly appreciated this new service and the demand for these workstations continued to grow. Henderson (1992) provided an update on the service:

This information retrieval technology has become so standard in all types of libraries it is hard to believe it has been available for such a short time. From our beginning with one workstation and one CD-ROM subscription, we had moved on by 1991 to three workstations. Where possible, both staff and library users have substituted searching on the CD-ROM databases for online remote searching. Much of the course-related searching we formerly performed for students is now done by students themselves on the Workstations. However, our online searching needs range much further than our CD-ROM databases, and
we continue to use online searching for faculty needs, to find quick answers to reference questions and to retrieve the most current citations not yet in CD-ROM versions of the databases. (p. 8)

CD-ROM technology was quite primitive at that time and there was no standard for CD-ROM access. Each publisher had its own CD-ROM access software that needed to be installed on the workstation. Sometimes these programs for the different packages conflicted. I spent a fair bit of time installing this software and ensuring that the packages continued to function properly. Often new retrieval software was included in the quarterly updates to the databases.

Our staff also had to use a standalone workstation and share the latest CD-ROM releases of the databases with our users. Obviously the situation was not ideal, but it continued to serve us and our users until we were able to put these CD-ROMs on a LAN. Because most of our CD-ROMs were only updated quarterly, the online versions of these databases were always more up-to-date. Our staff continued to use the online databases when necessary to update the CD-ROM searches, but it was cheaper to use the CD-ROMs for searching.

**Networked CD-ROMs (1992 to 1999)**

With the introduction of a LAN in the Faculty, it became possible to consider extending the LAN into the Library and to use it for improving access to our CD-ROM collection. I served as the Library resource person for a UTCS feasibility study for a CD-ROM network at FLIS (M. Misiek, personal communication, May 1992). Funding became available for the necessary equipment and networked CD-ROMs became a reality in the summer of 1992. Henderson (1992) reported in greater detail on the project:

> The most significant expansion in CD-ROM access has come this year. Through the very generous bequest of the estate of Professor Katharine Ball we have bought the equipment to install our major CD-ROM databases on the FLIS Local Area Network. When fully operational, students and faculty will be able to do their searching from the computing lab or faculty offices as well as in the Library. The Library provides the databases and the staff expertise both for instruction in retrieval and for technical aspects. With this enlargement in access we come one step closer to providing our students with ‘access to everything from anywhere’. (p. 8)

Although we had acquired “two CD-ROM ‘towers’ each running seven drives” (“Major bequest”, 1992, p. 2), initially we could only offer some of our CD-ROMs via the Faculty’s LAN. As we negotiated network license fees and found ways to reconcile software incompatibilities, we were able to increase the number available during 1993. By 1996 we had about eight CD-ROM products available via our network (“FLIS Library”, 1993, p. 1). We also included access to our in-house FIS Library Acquisitions database, UTLINK (the OPAC, UTCAT, and other databases offered by UTL), and the Inmagic software. A complete list of products offered and the breakdown between standalone and networked access as of October 1993 was included in a FLIS Times article (“FLIS Library”, 1993, p. 1). Students were finally able to do more work without coming into the Library.

Although these CD-ROM products were available for searching at various locations within the FLIS building, they could only be searched from four networked workstations within the Library itself (Henderson, 1994a, p. 3). We did not have full access at all workstations until the Inforum was created in 1997. As with CD-ROMs on the non-networked computers, access software was not standardized and it was necessary to install periodic updates and ensure that the different products worked smoothly together on the network. The software maintenance and initial troubleshooting for CD-ROMs on the network was handled by myself (M. Misiek, personal communication, May 1995).

We were never able to provide access to all of the CD-ROMs via the FLIS network because some producers did not allow network access either because of lack of licensing options or software design limitations. We continued to provide access to the others on a standalone workstation that we called our multimedia workstation. This workstation provided access to all of our other CD-ROMs including such products as Cutter-Sanborn Three-Figure Tables, ArchiVIA, Computing Archives, Encarta Multimedia Encyclopedia, the game, Myst, AACR2 Expert, Liu-Palmer Thesaurus Construction System, the children’s book, The Way Things Work, to name only a few (M. Misiek, personal communication, 1996).
Our users awaited dial-in access to our CD-ROMs so they could search our databases from home but dial-in access was always problematic. As explained by Henderson (1994):

> We know there is a lot of interest in dial-in access for CD-ROM searching. There are two problems: one is technical related to dial-in capacity-- it is not great enough yet-- the other relates to the licensing arrangements of some products which do not permit dial-in. (p. 3)

As late as December 1996, Gerry Oxford, our Network Administrator, was still talking about dial-in access problems for our CD-ROMS when he reported that there was “still no access to FIS applications and CD-ROM resources ... off your home computer by connecting to FIS” (Oxford, 1996, p. 7).

**UTL Network for Online Searching (1997 to present)**

Maintenance of the CD-ROMs on the FLIS network continued for a number of years but with increasing difficulty. Our users wanted off-site access but it was never reliable. The CD-ROM towers were introduced when the Faculty was using a Novell network; they did not function properly under the newer Windows NT system that was selected as the replacement network system. Much of the rest of the Faculty had already made the switch to Windows NT but the Informur was being held back by the towers. An added time constraint in this change was the Y2K issue of needing to have everything on the FIS LAN moved to Windows NT by the end of December 1999.

At about this time UTL was developing its own electronic resources collection and network solution. This collection was accessible to all three campuses as well as to users from off-site. Their network provided us with a viable alternative. We began moving our networked CD-ROM products to the UTL campus wide e-Resources web site in winter 1997 (M. Misiek, personal communication, May 1998).

Moving these products usually involved locating suitable non-CD-ROM-based replacements since the UTL network could handle only a limited number of CD-ROMs and access speed was greatly increased with non-CD-ROM-based products. I have no record of which titles were moved first but two had made the switch by the winter 1997. I suspect that at least one of these titles was ERIC from Dialog.

During the next year we continued to move over our most important products: Library Literature, LISA, and ISA. These CD-ROMs were all replaced by access to online databases available via the web (M. Misiek, personal communication, May 1999). In order to add these products the Library agreed to pay 75% of the new subscription costs. This was an increase over the price we paid for the CD-ROM products but we felt that the increased access to these databases for our users and the decreased staff time to maintain our own access made the cost more than worth it. This practice of contributing to the databases of most use to our users continues today. By fall 1999, we had completed the transfer of everything that could be moved (M. Misiek, personal communication, May 2000). Our practice at the end of 2008 was still to add new indexes directly to this network whenever feasible. We tried to add our Library of Congress products but they were never stable on the UTL network. Online access to them remains, for the most part, for staff and students in the cataloguing courses only.

**Participation in an ILS for Online Searching (not yet)**

UTL has chosen to maintain access to its e-Resources collection through a database system that is separate from its ILS. Following our early lead, entries for the journals in the e-Resources collection have also been added to the ILS. An attempt is made to keep these two databases synchronized every night. However, the main access to the e-Resources collection is through its own search interface. UTL is also building an additional level of access to this collection through Scholars Portal. As explained on the Ontario Council of University LibrariesÔ Scholars Portal web site, this service allows a researcher to:

> Query over 65 million references to scholarly journal articles from over 50 major index & abstract databases through a single search interface (Scholars Portal Search - Illumina). It's like a Google search of scholarly information sources.

> Our electronic journal collection contains more than 8 million articles from over 7,300 full text scholarly journals published by major distributors and presses (titles and numbers will vary with institutions).
Our service integrates & supports RefWorks, a web-based citation management system, and interlibrary loan & document delivery protocols through RACER (Rapid Access to Collections by Electronic Requesting) system which provides connections to the university libraries in Ontario and to major research libraries throughout the world to get the resources you need. (OCUL, 2005)

With Scholars Portal, UTL is working to create improved access to electronic resources but outside of its ILS. It is possible that a new kind of system that is above an ILS will need to be developed to handle information available and managed through a library system with the same interface as information available via the web in the future and that Scholars Portal is a step in this direction.

**Acquisitions**

Within acquisitions I am including various steps in the acquisitions of our monograph orders including pre-order searching; ordering; following up on orders not yet received; receiving orders; recording of invoice payments; notifying our users of new titles received; and monitoring of the budget.

When I arrived in September 1977, all acquisitions work was done using paper. Pre-order searching was done in the card catalogue or by using tools like *Books in Print* and the *National Union Catalog* to verify the existence of a title. Publishers addresses were located by using print publishers' directories. Orders were placed with form letters prepared by using a typewriter. Copies of multipart order slips were filed in the card catalogue to provide information concerning titles on order and received for our public and staff. Expenditures were totaled periodically using a calculator from vendor account information kept on 4x6 inch index cards. A new acquisitions list of titles received during the last month was produced by photocopying the order slips for these titles. This list was routed to faculty and PhD students to keep them informed about new additions to our collection. Today *Sirsi* handles most of our acquisitions needs but we use the web to locate publishers addresses and place some of our orders.

**In-house System - Acquisitions using dBASE II Software (1983 to 1998)**

*Ledger System:*(1983 to 1998). Automation finally came to acquisitions after the purchase of our first microcomputer in 1983. I created the Ledger System, in consultation with Lilian Chan, using *dBASE II* software. This system consisted of a database and associated programs that allowed us to record all monograph payments for titles received with vendor, invoice number, currency amount, and fund number. Monthly totals by fund number were produced to track amounts spent. The system was supplemented by the use of a spreadsheet to track serials invoice payments and annual totals. Henderson (1983) reported on this system:

> A ledger/accounting system using dBASE II as the programming language, has been developed to record the payment status of received orders, to debit funds, and to provide financial information on acquisitions. We plan to test the use of dBASE II for storage and retrieval of bibliographic files. (p. 23)

The use of this system allowed us to spend less time tracking order payments and processing fund totals and to better manage our expenditures. The lack of inclusion of serials invoices was only a minor inconvenience at this stage since so much time was saved totaling funds every month.

*Order System:*(1984 to 1998). The Order System was an extension of the Ledger System. I developed it in consultation with Lucy Dodd beginning in 1984 (M. Misiek, personal communication, May 1985). Again *dBASE II* was the software platform used. Instead of one database, the system consisted of 5 databases: for newly entered/ordered titles; for all titles on order; for received titles; for titles received & sent to Cataloguing but not yet catalogued; and for cancelled orders. The Order System allowed for the inputing of order information for monograph orders including authors, titles, vendors, and vendor addresses. This order information was updated and moved from one database to the next depending on the status of the order. Products of this system included:

- Form letters for ordering and claiming
- Slips for filing in the card catalogue to indicate titles on order or received
- Memos to individual faculty listing titles they requested that had been received in the last month
- Monthly new acquisitions lists
Titles could be tracked after they were received and until they were catalogued. Titles were deleted from the system after they had been catalogued and their cards had been filed in the card catalogue. Henderson (1985) reported on the finished system:

> During the year we completed the order segment of our automated acquisitions system on the microcomputer. This system maintains a record of orders, and publishers’ addresses, prints order forms, claims and other form letters, and generates a current acquisitions list. Like the accounting/receiving segment completed last year, it is searchable on a number of keys and is proving an efficient system for the Library’s order processes. (pp. 5-6)

After the Order System was completed it was integrated with the Ledger System to create a seamless system and to reduce any duplication of work done at the time a book was received (Henderson, 1986, p. 9).

The *dBASE II* database files were upgraded by Bruce Wood to *dBASE IV* and combined with a retrieval program to make the file of orders and books received and awaiting cataloguing searchable via the FIS LAN as a menu choice from the CD-ROM selection menu. The new version of this database was made available to our community in fall 1994 and was known as the FIS Library Acquisitions database (Henderson, 1994b, p. 5). It allowed our users and staff to have access to information about the status of titles both on order and received in the period before these titles reached our OPAC. Even though the network accessible database was in *dBASE IV* format, the Order System remained in *dBASE II* format since there was no staff time to upgrade it and we were already considering ordering options that would be more integrated with the OPAC. Periodically the *dBASE II* databases were converted into *dBASE IV* format for public searching.

The Order System allowed us to place and claim orders more efficiently since order and vendor information was stored electronically and only needed to be entered once. Bibliographic information could be used at various stages of the ordering process and could be easily edited as needed. The main negative of the system was its lack of integration with our OPAC. After the card catalogue was closed we had to search the Library Acquisitions database in addition to the OPAC to check if a title was in the Library’s collection or in the process of being acquired. The System was phased out in 1998 when we began using *DRA* for acquisitions as covered in the next section.

**Participation in an ILS for Monograph Acquisitions (1997 to present)**

A number of factors converged in 1997 to lead us to participate in the UTL DRA acquisitions module:

- Our card catalogue had been dismantled in 1995 and it became increasingly desirable to have a unified file of books catalogued and on order.
- Our OPAC had a large percentage of our collection and had become a viable representation of our collection.
- At the time that the Inforum was created there was a restructuring of staff responsibilities. It was necessary to reduce the amount of staff time spent on book ordering. For a year we tried an arrangement with the OISE/UT Library to place our orders. They already used *DRA* so it was an easy step for us to begin utilizing their expertise.
- Y2K was approaching. The Order System was designed in 1984 to use only two digits to represent the year. It would not function properly once the year 2000 arrived. There was no staff time to update the System to *dBASE IV*.

We began using *DRA* for ordering in May 1997 with OISE/UT staff placing our orders (M. Misiek, personal communication, May 1998). At first *DRA* was used for the bulk of our new orders but some non-standard orders continued to be entered into the Order System for another year or so. The *DRA* acquisitions module required that a bibliographic record be entered for each title ordered; as we began placing new orders we were contributing this information to our OPAC database. However, information for already received titles, as well as titles ordered using the Order System, remained in the Order System; these titles did not appear in the OPAC until they had been catalogued.
After a year, we took back our monograph ordering from the OISE/UT Library and continued to use DRA. As we gained experience with DRA we gradually moved all of our ordering to that platform.

In fall 1998 we began a project to phase out the dBASE II Order System. At that time over 2000 titles remained in the databases (M. Misiek, personal communication, May 2000). This project involved withdrawing some slight items that no longer fit our collection practice and reordering some unreceived titles by using DRA. The Library’s cataloguing section also worked hard to input any titles already received into the DRA database (M. Misiek, personal communication, May 1999). Most of this work was completed prior to December 1999. The Order System databases were archived to Microsoft Access files and kept for information only purposes at that time (M. Misiek, personal communication, May 2000). They were finally deleted in February 2009 with about 350 titles remaining. These titles had been received over ten years prior to 2009 so were deemed of lesser importance with respect to the provision of access. Any important titles from the pre-1997 period would have already been catalogued.

Finally with our orders in DRA we had bibliographic information for our collection and titles on order in one database for the easy use of our patrons. The status of orders was conveniently displayed for our users in the same location; this information was updated in real time as we received and catalogued titles. The DRA acquisitions module had all of our previous functionality except for the production of acquisitions lists and memos to faculty and the ability to track all of our acquisitions expenditures.

When the UTL replaced DRA with Sirsi in 2002, the FIS Library continued to participate in the new system. In preparation for the switch to the new system, ordering and receiving using DRA ceased in June 2002 and the DRA database was frozen in July 2002. The implementation of the acquisitions module of Sirsi was delayed several months until November 2002. During this period I used a Microsoft Access database to hold information on the the titles that we continued to order. It was an unsatisfactory solution but reduced the ordering of duplicate titles. These titles were added to the Sirsi database as they were received (M. Misiek, personal communication, May 2003). Order information made the transition from DRA to Sirsi reasonably well. Our vendor records required some editing. We took care of this quickly. Our file of cancelled and closed orders also required some editing but the need for this work did not hinder our daily operations in any way and continues at a slower pace as time permits.

The Sirsi system improved our editing capability and finally provided a Windows interface for staff in the latest upgrade.

Participation in an ILS for Materials Budget Information (1997 to present)

It took ten years for us to be able to replace our ability to produce a timely fund report for our acquisitions expenditures to date that was lost when we retired our dBASE II Order System.

At the time we moved into DRA for acquisitions we also lost our full time staff position dedicated to paying our invoices and tracking our fund expenditures. This tracking had previously been done with our Order System and a spreadsheet. Now this work was incorporated into the Faculty’s larger financial operation. Spreadsheets and the University’s IMS financial system were used to track our payments and produce fund totals. Initially these fund reports were produced monthly. The financial section’s increased workload under the new staff configuration meant that it became increasingly difficult for these reports to be produced in a timely fashion. The total expenditures to date are particularly crucial toward the end of the fiscal year so that we can ensure that our expenditures are in line with our budget allocation. Of course that was precisely the time of year when it was most difficult for these reports to be produced.

Once we began to use DRA for monograph acquisitions we began to be able to ascertain total funds spent on these orders as part of the acquisitions process in real time. However we still had the bulk of our expenditures, mainly for serials, outside of the ILS. We operated with less than optimal information on our expenditures until 2008 when we finally completed entering the information for all of our current serials subscriptions and memberships into Sirsi. We also began to record all payments for our electronic resources at the same time. For the 2008/09 fiscal year we were finally able to produce fund reports that were close to the totals furnished by our financial people. In other words we are now able to determine the state of our acquisitions fund expenditures immediately at any point in the fiscal year and by ourselves through the information in the ILS.
New Acquisitions List on Web (2000 to present)

The new acquisitions list component of our dBASE II Order System was still missing from DRA. We could not generate a report to satisfy the criteria needed for this list. No new acquisitions list was produced from spring 1997 until January 2000 when I succeeded in working out a procedure to create the list from a DRA report of newly received titles. This report was only minimally formatted and had extraneous information. The bibliographic information on newly received titles was copied into an HTML document and edited to display properly in a web page; additional titles, such as those received from gifts or in electronic format, were entered from scratch. A new page was posted on the Inforum’s web site each month. It was a very cumbersome and time consuming process but finally provided our users with information on the work of our collection development activities again. The link to the new monthly web page was sent to faculty and PhD students by email. Our new acquisitions information on this web page was also available to the whole world for the first time (M. Misiek, personal communication, May 2000). The same procedure was used once we moved to the Sirsi system because a suitable report still could not be generated. The procedure was no less time consuming even when most of the page creation work was done by student assistants. When I moved to part-time work in preparation for my retirement it became necessary to discontinue the production of this list. The last list in this form was produced in September 2007 (M. Misiek, personal communication, May 2008).

In preparation for the end of the new acquisitions list in this format, work began on a way to integrate information on newly received titles into the early stages of the cataloguing process. This new process is less time consuming and uses the bibliographic and item status information from the OPAC to provide enhanced content for the new acquisitions list. Items in this list are generated dynamically from information in our bibliographic records so that the status information is always current. Title page images, when available, appear in the list. Through the title information in the list, users also have access to any abstracts and reviews provided in the OPAC. The design and programming of this new acquisitions list was undertaken by an Inforum intern, Steve Marks. It became available from our web site in 2009. (S. Martin, personal communication, July 15, 2009)

Reserve Collection

Our Reserve collection consists of materials, mostly books, which can only be used in the Library or borrowed for short-term two day loans. As with the Xerox File collection, the Reserve collection is created from books cited on Faculty course reading lists. Together these two collections are known as our Short Term Loan (STL) collection.

Surprisingly little has been written about the early days of the Reserve collection and my memory of this collection is hazier than for other areas covered in this report since I had less involvement with it. As I remember, when I began all information about the STL collection was kept on orange index cards and on copies of reading lists available at the circulation desk. Lists of books on reserve were typed using a typewriter. Today information on our Reserve collection is available through the Sirsi system as part of our OPAC and circulation system.

In-house System: Reserve Collection using dBASE II Software (1983 to 1999)

For many years, access to the titles in the Reserve collection was very poor. Students were expected to access the collection via their reading lists; they could also browse the shelves for the 2-day loan part of the collection. The closed-access behind-the-desk Reserve collection was never accessible for browsing. And, of course, browsability does not work when titles are out in use. Although access was poor and this collection would have been a good candidate for automation, the small size of the collection probably led to the relatively late introduction of automation.

Soon after we acquired our first microcomputer, work was begun on the Reserves Management System by Ellen Jones, Circulation and Reference Librarian, in 1983 using the dBASE II software. The Reserves Management System consisted of a database with information about titles placed on reserve including title, call number and location. A set of programs allowed for the inputting and editing of this information. Titles on reserve could be printed in a list organized by title, call number, location or record number. Henderson (1984) reported on the benefits of this system: “The Reserve list was produced using the microcomputer; after initial inputting of records, updating is considerably faster, and the list can be produced with access by both title and call number” (p. 11).
The lists produced from the Reserves Management System allowed for easy updating of our reserve information and easy browsing by our users. Users still could not determine for themselves if a book was in use or when a circulating book was due back. The Reserves Management System provided improved access but did not automate the circulation of the collection itself.

**Participation in an ILS for the Reserve Collection (1991 to present)**

Use of the Reserves Management System continued until we participated in the circulation module of the UTL ILS. From the *Annual Reports* it is not clear if we were able to begin entering our reserve collection information from our first use of the circulation system in 1991 when UTL was using the UTLAS T/Series 50 system or if we waited until 1992 when the switch was made to DRA (Henderson, 1992, p. 8). It does seem that the Xerox File collection could not be included until we moved to DRA. My guess is that we began entering our Reserve collection information in the T/Series 50 system in 1991. My research indicates that the system was much improved once we were in DRA ("DRA chosen", 1991, p. 1). We continue to use the Reserves module in the Sirsi system.

Once our Reserve collection was fully integrated into the ILS, it was easy for users to determine which titles were on reserve and if they were out in circulation. Combining access to both parts of the STL collections, Xerox Files and Reserves, in one ILS module was an added benefit for our users. Our entry into and benefits derived from the ILS circulation system will be covered in a later section. It was not possible to use any of our existing reserves database when we began implementing the ILS circulation module so it was deleted. I did not locate any old listings from this system.

In the last few years, we have also begun supplementing our Reserve collection with Blackboard, a learning management system. We enhance the "course reading lists with embedded durable links to online articles, databases, catalogue pages, and other e-resources." The linked reading lists are then uploaded to the Blackboard site for the appropriate instructors ("Course support", n.d.). This use of a learning management system is outside of our ILS but may indicate another kind of service, similar to the one for the e-Resources collection, that may need to be incorporated in the future.

**Circulation**

The circulation function covers the circulation of our collections to users, including the monograph and STL collections. Early automation efforts for the two parts of our STL collection were covered in previous sections since these initial projects only improved access to the collections and did not provide any automated assistance for their circulation. I will also briefly cover inventory control here.

When I came to FLS we signed out an item for circulation on a 2-part circulation form also known as a circulation slip. One slip per item borrowed was filled out; the author, brief title, call number, patron information, and date due were manually entered on each slip at the time of circulation. The copy of the slip was usually placed in a pocket at the back of the item. The original was kept in a box at the circulation desk in different sections based on the collection to which the circulating item belonged. Within each section the slips were arranged in call number order, or in author/title order for Xerox file items. This file of circulation slips was checked each time a request was made to determine if an item was out in circulation. The circulation slip was pulled when the item returned to the Library. The shelf list contained information about items that had been deemed missing in the last inventory. Item status information, i.e. charged, missing, etc., was only available to Library staff. Up until the last 10 years we did an inventory of all the circulating collections annually at the end of the spring term. More recently the inventory has been done less frequently.

This system was very cumbersome to use and prone to errors. Because information was recorded manually on the circulation slips, there were often errors in recording the call number of the item or the patron contact information. Unclear handwriting also contributed to errors. Following up on overdue items was time consuming since it was difficult to locate the overdue items in the circulation drawer. Also it was easy for the circulation slips to be misfiled.
Blocking of patrons with overdue items or large fines was very difficult. Today we participate in the circulation module of the Sirsi ILS.

Planning & Preparation for a Circulation System (1967 to 1991)

With circulation being such an important function in libraries and one that, especially in STL collections, may involve repetitions of the same operation for the same item many times in a short space of time, one may wonder why it was so late to be automated in the Library. There are three main components that need to be in place before the circulation function can be automated:

1. Each title needs to have a meaningful representation in a database. In our case, each title needs to have a bibliographic record in a database. In a large library system like UTL's this record is created and stored in the standard MARC format for bibliographic data. In order to make entry into a circulation system viable, a large portion of your circulating collection, at least the items most likely to circulate, need to be in machine-readable format before implementation can be seriously considered.

2. Each circulating item needs to have a machine-readable label, often these days a barcode label, affixed to it. This label is then linked to the bibliographic record for that item.

3. A suitable circulation system, along with appropriate hardware and staff support, must be found and acquired.

Creation of a database (1970 to 1986). As discussed earlier, our initial project in 1971 to create MARC records was actually undertaken, at least in part, with a circulation system in mind (Land, 1971, p. 16).

However, as discussed in the Cataloguing Section of this report, although this database was created with MARC tags, we were never able to edit it. In the end, we recreated all of this bibliographic information when we began using the CATSS system in 1976. We started by only entering bibliographic information for newly acquired titles or for those needing editing changes. Work progressed slowly until 1985 when gifts from a retired faculty member and some alumni funded a major part of a RECON project (Henderson, 1992, p. 7). This project was covered in greater detail earlier in this report. Henderson (1986) reported that "Of some 40,000 titles held, about 60% are now represented by machine-readable records. Samples of circulated material suggest that this level will be adequate to support about 90% of use" (p. 9). With respect to the creation of the database, we were prepared for a circulation system at an early date.

Barcoding and linking of the collection (1991). During the 1990/91 academic year, we planned and implemented a project to barcode and link our two major circulating collections, the general monograph collection and the Subject Analysis and Systems (SAS) collection. This project was known as ÖBLISSÖ. This name resulted from a student submission in a contest to name our barcoding project. ‘BLISS’ stood for “Barcodes for Library & Information Science Stuff” ("Winner announced", 1991, p. 2). All staff worked to complete the project by spring 1991 (M. Misiek, personal communication, May 1991). As reported by Henderson (1992), “A major project to barcode the collection was planned and undertaken. The ‘BLISS’ project using staff and student assistance completed the barcoding and linking of the collection before the target date and under budget" (p. 8).

Any additional titles from other collections, that needed barcoding, were handled as they circulated.

Selection of a Circulation System (1967 to 1991). As discussed in previous sections, we started planning for an automated circulation system many years before we had much of a hope of being able to implement one. Mention was made of this by Land (1968) as early as the student programming projects in 1967/68: “B.L.S. programming projects included circulation control...” (p.11). Preparing for an automated circulation system was also given by Land (1971) as a reason for the project to create bibliographic records in MARC format (p. 16).

Desire for an online circulation system was mostly in the background but not forgotten until the 1984/85 academic year when we started more serious planning. As reported by Henderson (1985):
Overall, we worked on the development of a plan for automation in the Library which would be based largely on microcomputer hardware and purchased software. Impact of the contract between the University and UTLAS after its sale to the private sector, as well the developments in automated systems at the Central Library are considerations in our own planning. We anticipate that we will complete a systems design/specifications for an online catalogue and circulation system next fall. (p. 5)

During this period UTL was grappling with the same problem. UTLAS was developing an automated circulation system to enhance its online cataloguing support package. As reported by Henderson (1986), "We will also be assessing the implications of the online circulation/inquiry system in the University Library when it is up in mid-1987. Of course, the major hurdle - a formidable one - remains the funding of the project" (p.8). In the end, Utlas, Inc., as it was later known, decided to abandon work on its in-house system and purchase the T/Series 50 Circulation System and Online Catalogue from Dataphase in 1988 (Saffady, 1993, p. 69).

We continued to review our options and wait for UTL until finally in 1988/89 Diane Henderson and myself drafted a proposal for funding for our entry into the UTL circulation system (M. Misiek, personal communication, May 1989). Our entry into the system was delayed until 1991 but we were ready because of our RECON and BLISS projects. Funding for our participation came through from an unspecified source in 1990: "The FLIS Library has been funded to join the University of Toronto automated circulation system as one of the group of libraries being added in this academic year" ("News From", 1990, p. 3).

Participation in an ILS for Circulation (1991 to present)

UTL implemented the T/Series 50 Circulation System and Online Catalogue in 1988 ("UTL inaugurates", 1988, p. 1). This was UTL's first experience with an ILS. The circulation functions were extended to other UT libraries over a period of several years ("Additional campus", 1990, p. 2). When UTL opened up its new T/Series 50 online circulation system to additional UT libraries, the FLIS Library was "in the first group to implement" it (Henderson, 1992, p. 8). This system did not have the full functionality required so UTL soon started the search for a new system in 1991. After only a year's experience with the T/Series 50, the FLIS Library joined the rest of the T/Series 50 participants in migrating to the DRA ILS; this new system was launched at the beginning of September 1992 (Henderson, 1992, p. 8). UTL continued with DRA for 10 years until it acquired the Sirsi ILS; we continued to participate in this new ILS which went 'live' in August 2002 (M. Misiek, personal communication, May 2003). With each system migration, a large portion of the circulation information was successfully ported from the earlier to the later system. The Reserve collection migration was unsuccessful; it was necessary to recreate the collection within Sirsi (N. Moro, personal communication, August 7, 2009).

Our use of an ILS gives patrons increased access to circulation information. From the OPAC, they can determine the status of needed items, such as on order; received; out in circulation and expected date of return; or missing. They can also place holds for materials online. Overdue notices are sent to them automatically by email. From the staff perspective, we have vastly improved control over our circulation function. Circulating items belong to particular collections; loan periods for the various collections are set as parameters in the system. Due dates are assigned automatically when an item is charged out. We only need to check one system for information on the status of items in our collection. Patron information is readily available. Patrons are blocked based on parameters set in the system for things like too many loans, too large a fine, or too many overdue items. Information on missing titles is recorded in the circulation record with a missing location. It is a vast improvement over the old method.

Inventory

Performing an inventory of our collection is a very labour intensive operation. It involves checking each item in a collection to determine if it is on the shelf, out in circulation, or can be accounted for in some other way. A record is created for items deemed to be missing. Throughout the period of this report our inventory was a mostly paper-based operation and was actually overseen by our cataloguing department. I have decided to include it with the Circulation Section since it is really more of a circulation function; an item either goes missing because it has not returned from
circulating or because someone has borrowed it by by-passing the correct circulation process. In the Library inventory is still supervised by our cataloguing staff but may be moved to our circulation department in the future.

When I came we did an inventory every year at the end of the spring term. In preparation for the inventory, the circulating collection was shelf-read to ensure that the items were in the correct order on the shelves. Records from our paper files such as the Reserve collection shelf list and the paper circulation file were inter-filed into our main shelf list. The shelf list was taken up to the stacks and a team of two people worked through each section of the collection determining if an item was on the shelf, accounted for in another collection or because it was out in circulation, or missing. A list of possibly missing books was created. This function was originally part of cataloguing because as the shelf list was compared with the items, discrepancies between the call number on the item and the shelf list call number were discovered and reconciled. It was also used as a way to check on the condition of items in our collection and mend items needing repair. The list of missing books was double checked for errors and searched periodically in the stacks to see if the items returned. Missing information was recorded on the shelf list. Patrons needed to inquire of staff to determine if an item was missing.

Once we began using an automated circulation system we needed to amend our procedures to check the system for the status of items not on the shelf so some parts of the procedure were somewhat more automated. Also, when we moved to Sirsi we were able to add the missing status to our circulation records so patrons could determine for themselves the status of items not on the shelf. In 1997 after the Inforum was created we decided to do our inventory every other year. Because of a reduced number of staff and the priority of more pressing projects, we did not even manage to keep to this schedule. After we decided to retire our shelf list we needed to find a new way to do inventory. The May 2009 inventory was the first to use the new procedure. I did not participate in this inventory but as I understand it, the new procedure involved taking laptops to the stacks and comparing the online shelf list with the items on the shelves. As with the previous procedures the shelves were shelf read first. This procedure still required a two-person team to work through the stacks and a paper list of missing items was still compiled. This list was still checked for errors.

The new procedure still required a heavy commitment of staff time to get the collection in shape for the inventory and to perform the inventory itself. However, as I understand it, by making use of the additional functionality of Sirsi the process went more smoothly and took less time. Additional changes to the inventory process would still be needed for me to be able to say that inventory control was actually part of our ILS but it is moving in that direction.

**Interlibrary Loan (ILL)**

This section covers the introduction of automation to our interlibrary loan functions. Throughout most of the period covered by this report, we participated in both the lending of materials to other libraries and the borrowing of materials for our users.

When I arrived ILL was done manually with paper records. On the lending side, requests from other libraries for our items came to us by mail and we sent the items, including photocopies of articles, off by mail. On the borrowing side, we located addresses for libraries from which to request materials by using paper directories of library addresses. Since we did not have access to their catalogues, we often had to guess at the likelihood that the library would own the needed item before sending off a request. Our requests were also sent by mail and the items came back to us by mail.

At the present time our ILL service has been suspended but when we last provided the service we were using both the Ariel and VDX systems described below. Virtually all of our ILL requests, on both the lending and borrowing side, were submitted via VDX. The fulfilling of copies of journal articles was mostly done using Ariel with fax as a backup. Only the loan of monographs was done by mail.

**Email & Fax (1985 to 2003)**

Today it does not seem like a very big deal but the first use of automation for ILLs involved the use of email to place and receive requests for the loan of items. As reported by Henderson (1985), "The use of electronic mail to place and
receive requests has made that part of the process more efficient, but document delivery time cannot be much reduced" (p. 5).

Also at some point within this period we began to use a fax machine to send and receive photocopies of journal articles and also to place and receive some requests. I could not find a date for the introduction of faxing for this or any other operation mentioned in the Annual Reports or elsewhere but know that it occurred.

My involvement with ILL began in 1997; I can supply no additional information about this function prior to that date. However it is obvious to me that both modifications to ILL procedures did speed up the placing and filling of requests.

**Ariel on networked workstation (2002 to 2008)**

The Ariel Document Delivery software was already widely in use within the UT library community and at university libraries throughout North America when we began looking into using it at the FIS Library in early 2001 (M. Misiek, personal communication, May 2001).

The Ariel software facilitates the sending and receiving of journal articles for ILL purposes within the research library community. By using Ariel it is possible to scan journal articles and transmit the electronic images directly to other Ariel workstations anywhere in the world, by using either FTP or e-mail (Ariel Interlibrary, 2008). After acquiring the necessary software, dedicated networked workstation, and scanner we implemented Ariel in June 2002 (M. Misiek, personal communication, May 2003). We continued to use this software until 2008 when our ILL service was temporarily suspended because of staff shortages.

**UTL VDX system (2003 to 2008)**

Even though part of the ILL process had been automated, most of the process remained paper-based. This process was somewhat manageable within a small library like ours but was quite unwieldy in a library as large as UTL. UTL began looking for an ILL system to assist in tracking its ILL requests. The system selected was the VDX (Virtual Document eXchange) system from Fretwell-Downing Informatics. Even after the system was purchased, it took several more years to implement since the decision was made to use it as a province-wide academic library system to facilitate the loan of materials throughout Ontario. UTL, including the Inforum, started using the system in December 2003. The Inforum was a full participant in VDX as a home library. This meant that we both borrowed and loaned materials and resolved problems encountered by our users in the filling of their requests through this system (M. Misiek, personal communication, May 2004).

VDX fully automates the ILL management process (OCLC, 2009). With a province-wide VDX system our users could now search the collections of libraries throughout Ontario and also throughout Canada and North America from one interface to locate needed research materials that are not part of the UTL collection. Requests for these materials are made from within VDX. Users place and track their requests using the RACER system that was mentioned earlier as part of Scholars Portal. Participating libraries receive requests directly from their users, forward approved requests to owning libraries, and track the requests all within VDX. The issuing of invoices and the records of loan fees are maintained in a separate system; this is still a paper-based system at the Faculty’s Library. Items out on loan must be charged using Sirsi; copies of requested articles are still using Ariel. The last time I supervised ILL, there was no interface among the three systems (Sirsi, Ariel and VDX) but this system is much improved over our old ILL process.

After a review of the university-wide operation of the VDX system, UTL decided to reduce the number of requesting libraries from 10 to 4. As of January 1, 2005, the Inforum stopped borrowing materials for our users (M. Misiek, personal communication, May 2005). We did, however, remain a lending library until 2008 when we temporarily suspended our ILL services.

**Participation in an ILS for ILL (Not yet)**

As I mentioned above, the VDX and Ariel systems that are currently used in the management of ILLs within the UT library community are not connected to Sirsi. Therefore it cannot be said that ILL is part of the UTL ILS. UTL continues to work toward greater integration of ILL with the rest of its automated system. Perhaps ILL management is
another candidate for a future system that can combine an ILS with e-Resource management, a learning management system, and ILL management system.

Selected Miscellaneous Projects

Over the years the Library has participated in a number of automation-related projects that are no longer active. I have only selected several of the many projects that involved Library staff over the years for discussion in this section. These projects are representative of some areas of automation typical at the time they began or of areas where our Library was in the forefront of developments.

Telidon (1979/80 to 1985)

For several years the Library, along with three members of the Faculty, Professors Schabas, Williamson and Forgie participated OECA field trials (Henderson, 1980, p. 19) of the Canadian videotex system, Telidon. As reported by Packer (1980), Telidon was to be

... a system for providing information to the home consumer using a combination of communications technologies - television, telephone and computer. The implications of this system, and its potential for the enhancement of library services are immediately apparent. The importance of involving librarians in the design of such systems is equally evident because it is they who possess the skills in information storage and retrieval and the experience in providing information to meet the needs of the student, the researcher and the general reader. During 1979-80 three members of the Faculty have been working on research related to the Telidon System. Professor Schabas has been engaged in research on file organization for the Department of Communications and Professor Williamson has been investigating alternative database structures with a view to proposing an optimum structure for use in the field trials of Bell Canada’s videotext system (VISTA). In addition Professor Forgie began work on a study of user reaction to Telidon. This dramatic new development has placed increased emphasis on the importance of audio-visual communication in the education of librarians. (p. 1)

In some respects Telidon was a precursor of our current Internet. Boyko (1997) explained further that “... videotex is an information delivery system that makes use of the telephone for two-way telecommunications. It may also be linked into two-way cable TV or hybrid cable TV/telephone system.”

The Library had a Telidon terminal and provided some content for the project. As reported by Henderson (1981):

We offered a number of demonstrations, both to students and outside users interested in the potential of Telidon for the future. In addition to providing access to the Telidon data base, we have created two small sets of "pages", one containing information on services and facilities of Metro public libraries, the other a current awareness service for librarians, consisting of selections from Forthcoming Meetings and Library Science UPDATE, and a library marketing program. (p. 20)

There is no indication of how long the Library participated in this project but the entire Telidon project ceased to be funded by the Canadian government in 1985 (Boyko, 1997).

Electronic Resources Project (ERP) (1994 to 1999)

During the 1993/94 academic year, Dean Fasick, Diane Henderson, Gerry Oxford, FLIS Network Administrator, and myself drafted a proposal for the Electronic Journals Project. We received $87,000 in funding from the Academic Priorities Fund of the University of Toronto for the 1994/95 academic year. After funding arrived, the project developed a slightly broader mandate and was renamed the Electronic Resources Project (ERP). The purpose of the project was to investigate the improvement of access to library, archival and information science electronic journals and to develop Internet-based course packages for FLIS courses. Part of the improved access to these journals involved developing procedures for adding electronic titles to the OPAC. We hoped our results would be generally applicable in other situations (M. Misiek, personal communication, May 1995).
Some work was done on the Internet-based course packages but most of our efforts focussed on improved access to the electronic journals. Oxford and I (1996) gave an overview of the project:

The main goal of the Electronic Resources Project is to improve access to our electronic journal collection. From our Web-based search form, users can do Boolean searches of full text, title, author, and other categories on a per-article basis, and then select and retrieve articles from a list of hits. Search terms are highlighted within the text. We achieve this result by marking up journal issues using SGML, loading the issues into an OpenText database, and providing for searching through the Web form. Our electronic journal collection of about thirty titles is also catalogued and searchable through the Web interface to UTCat, the University of Toronto union catalogue, and accessible through hot links in the 856 field of their bibliographic records. (p. 73)

The results of some of our work on collecting and providing Internet access to electronic journals were reported at the 1996 Canadian Association for Information Science annual meeting (Misiek and Oxford, 1996). The initial work on collecting and providing Gopher and later web access to e-journals expanded to include access to these journals through the OPAC:

As the project progressed, it became apparent that a higher level of access to the collection was desirable. This level of access has been provided by the cataloguing of our electronic journal collection and the inclusion of the records with our existing bibliographic records to create an integrated catalogue of library resources. (Misiek, 1996, p. 2)

A discussion of the part of the project that developed procedures for the cataloguing of Internet resources is covered in the Cataloguing Section of this report. The Faculty benefited from the ERP project in many other ways including the purchase of a Sun Sparcstation and the Open Text database software (Misiek, 1996, p. 2). Work and funding continued on the project for several more years and finally ceased altogether in fall 1999 when we began deleting files of journal issues collected (M. Misiek, personal communication, May 2000). We also used our expertise to work "with the OISE Library to mount some education electronic journals" (Misiek, 1996, p. 3).

When we began this project there was little standardization in the format of electronic journals or concern about the archiving of back issues. Because of this lack of standardization we found it difficult to develop a fully automated procedure for handling the marking up of new journal issues as they arrived. Our work was very labour intensive. By the time the project ceased, many larger publishers like Elsevier were already starting to get involved in electronic journals and universities like UT were participating in providing access to them and co-operating in the archiving. There was little need for a small player like FLIS to remain involved.

Our treatment of electronic journals with respect to our cataloguing practices is currently still informed by the work done within this project. However, we now rely on the UTL e-Resources web site for access our electronic journals.


A project to investigate the feasibility of the electronic submission of dissertations and theses at the University of Toronto grew out of the ERP.

Beginning in fall 1996, I began to participate in discussions with Karen Turko of UTL and Kent Haworth of York U Library on the design of a co-operative project to explore the storage and distribution of dissertations in electronic format. Funding became available from our partner libraries in summer 1997. (M. Misiek, personal communication, May 1997) The official name was the Joint Electronic Thesis and Dissertation Project. Work continued under my supervision until January 1998 when Karen Turko took over the Project and funding became available from one of her grants (M. Misiek, personal communication, May 1998). While this project was under my supervision, work was mainly done on researching existing projects, including one at the Virginia Tech, that dealt with dissertations electronically and exploring the possibility of co-operating with other universities in Canada.
Electronic thesis submission has been a reality at the University of Toronto for several years but FIS Library participation ceased soon after the project moved entirely to UTL and I do not know if this project led to the reality of today.

**Conclusion**

The Library was one of the earliest participants and beneficiaries of the first systems projects in the School. These involved our Serials and Technical Reports collections. In later projects we often benefited from system work developed and implemented elsewhere such as in our participation in the ILS of UTL.

In the early days of automation, because of the lack of standardization, we often needed to re-input data from one system when we began using the next improved version. As we gained experience and especially after we implemented full the MARC format for bibliographic data, we have seen increased portability of our data from one system to the next.

As automated systems have become more mature, it has become increasingly important to work towards giving our users “access to everything from everywhere” (Henderson, 1992, p.8) and to make that access more seamless. It began for the Library in 1988 when our bibliographic records first appeared in the UTL OPAC and continued as we added our circulation information to the ILS in 1991. Later in 1992 we added our CD-ROMs to the FLIS LAN. Finally our users could search both of these major collections from one terminal. Now we also have acquisitions and serials holdings information in the ILS. Through the UTL e-Resources web site our users can search our indexes in electronic format from outside the university. This integration has progressed in a virtual sense with the ILS and the Internet and also in a physical sense with the creation of the Inforum that includes the collection, technology and instruction in one location.

This exercise which began as an attempt to capture some of the Library/Inforum’s history with automated systems before it completely disappeared has been a surprisingly rewarding one for me as I have reviewed the automation-related highlights of our Library. To name a few:

- Through participation in the early School research projects we were one of the first libraries at UTL to benefit from automation in 1966.
- We were one of the earliest adopters at UTL and in the Faculty of online searching in 1978/79.
- With the purchase of our microcomputer in 1983 we were the first in the Faculty to use a microcomputer for administrative work.
- We had the first CD-ROM workstation for the public in the UT library community in 1987.
- With our Electronic Resources Project, we developed one of the first collections of e-journals in library and information science in the world in 1995.
- We led the UT library community in the cataloguing of Internet resources and creating “hot links” between the OPAC and the full text of the document on the web.
- In 1997, with the creation of the Inforum we were the first UT library to integrate print resources with computer access and staff to assist users with the use of both in one location.

I hope this history will be of some use in the future. I have had the privilege to be involved in development of automation at the Faculty for over 30 years. Many of these later projects were also highlights of my career.
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1 A note in our bound volume indicates that no annual report was issued for the 1986/87 academic year. 2 Diane published annual reports under both S. D. and D. Henderson; her reports have been referenced as authored. 3 I neglected to sign the report and so have not referenced it under my name. 4 An example of the format for a KWIC index can be found in Reitz (2007). 5 An example of the KWOC index format and a comparison with the KWIC index format can be found in Reitz (2007).