

## *Taking a Byte out of Computer Anxiety: The Continuing Education of an Archivist*

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Let me begin with a short anecdote to offer hope to those archivists bemused, bewildered, or just plain intimidated by the thought of having to cope with electronic records. In the winter of 1991-92, the Government Archives Division of the National Archives of Canada held a number of training sessions on appraisal for all archivists, both experienced and neophyte, involved in the acquisition of government records. One session, devoted to electronic records, provided an overview of progress in the last ten years, the major operational areas likely to produce electronic records, the types of systems one is likely to encounter in government institutions, the general appraisal criteria to remember when assessing the value of these records—as well as considering three recent case studies undertaken by Division staff. After the session, I tested the reaction of my colleagues. One archivist having a considerable number of years' experience with paper textual records, and who had previously acknowledged that EDP records were not his "cup of tea," commented that the session was generally good but felt that the points being made were really "old hat"! Another archivist also experienced in textual records felt that the tone of the session was "pitched too low." He obviously had been expecting something more in-depth on the complexities of acquiring automated information systems. Informal comments from my other colleagues having similar backgrounds in paper records were in the same vein.

As I reflected upon the views of my colleagues, I found myself feeling encouraged and optimistic about archivists' collective abilities to come to grips with the electronic medium, about which many of us, ironically, had at one time shared ambivalent feelings; ambivalent because we realized the usefulness of computers but feared direct involvement with them, not understanding how they worked and being frustrated and repelled by the terminology associated with their use. I found myself thinking that we had come a long way since the autumn of 1986, when the merging of the Machine Readable Archives Division and the Federal Archives Division caused ripples of angst among all the staff. (Perhaps fear is a more accurate term for my own initial reaction!) Now we are less intimidated by computer records and even eager to undertake the archival appraisal of information existing in automated form. We "retreads" were schooled in the traditional archival principles and procedures, confidently applied to paper files; once the realization that those same archival principles and procedures generally still applied to electronic records—subject to technical considerations—had dawned, however, the archival appraisal of electronic records seemed less perplexing and actually possible.

This paper addresses the highlights of my journey as an archivist coping with records in both media; it also incorporates certain views of my colleagues in the NA Government Archives Division, as interpreted by myself (for which I take full responsibility and thank them for their insights). I hope to show that formal training, practical experience, and an open and patient attitude towards skills acquisition, combined with a structured approach to acquisition, the amazing changes in the technology itself, are all helpful in the acquisition of, and imposition of control over, such records.

My first introduction to computer records came when I was a very junior archivist in the Manuscript Division. About three months after my joining the then Public Archives to work with literary and performing arts material, the Machine Readable Archives Division invited Manuscript Division staff to become acquainted with their work through a tour of their facility. This Division was physically separated from the rest of the Archives Branch through being housed in a satellite building that stored manuscript and government records; there was, consequently, little regular contact with the majority of Archives staff. Our hosts eagerly and enthusiastically talked about their work and just as eagerly asked us paper-based archivists about ours. It was clear, however, that there was an intellectual as well as a physical separation between us. After the tour, one of my colleagues half seriously and half jokingly remarked that he was glad he worked with nineteenth-century records written in plain English or plain French! The rest of us shared that awestruck sentiment. The archives of the future intimidated us just a little, for we did not fully understand the computerized world and its baffling technical jargon. At the time, I naively believed that computers were not very relevant to the work in which I was then engaged.

For the next few years my archival responsibilities did not involve either electronic records or equipment. However, the world of automated information systems gradually was catching up. When I joined the Federal Archives Division in 1982, a computerized system had recently been installed to control the holdings. Called FEDDOCS, this system captured accession information, produced backlog statistics, provided locations for the permanent volumes and unprocessed accessions, and indicated the access status of each volume of records. In short, the system provided basic data useful to all staff in carrying out custodial and reference work. While most of the information was initially provided in hard-copy format, terminals were also installed within the division and staff were trained to use the query functions. FEDDOCS ran on MINISIS, a software that was not, and still is not, particularly user-friendly. A slight variation in a command—even merely an extra space or comma—would cause annoying messages such as “syntax error” to appear on the screen. Some staff persevered and used the system quite regularly; others preferred to consult the paper copy, which did not talk back. In addition, archivists regularly used computer-generated finding aids for certain high-usage record groups, and came to appreciate their usefulness in quickly providing answers, even if the tools were flawed. Slowly the computerized world crept into our traditional paper-based one.

In the mid- to late-1980s a number of events combined to change our archival world forever. A new Dominion Archivist was appointed in 1985, not an archivist but an historian with an interest and passion for automated information. He quickly realized that machine-readable records were out of control within the federal government and resolved that this situation must be addressed, before valuable archival information in automated form was irretrievably lost. A federal task force examining all government departments in an effort to streamline government activities and expenditures criticized the then Public Archives for not really knowing what it was collecting. Subsequently, the new *National Archives Act* put teeth into the Archives' mandate to acquire and preserve all records of national significance. The Act enshrined a broad definition of “record,” which included those created in machine-readable format, and required that some 144 federal institutions had to seek the permission of the National Archivist to dispose of their records, irrespective of the medium. Senior officials and managers within the

Archives started to talk about developing an acquisition strategy as a means of acquiring nationally-significant public and private records. Lastly, the appraisal of government textual records increasingly became more closely linked to the existence of large automated systems.

One of the first steps taken to facilitate the appraisal of government records in all media was to merge the two divisions that jointly had responsibility for the acquisition and preservation of the majority of the valuable archival records created by the government of Canada. The Government Archives Division, accordingly, came into being in the late autumn of 1986, created through a merger of the Federal Archives and Machine Readable Archives Divisions, to tackle the immense problem of the disposition of government records. If the approach to this problem was to be comprehensive, what then was expected of staff in order to implement the changes? Divisional management decided to train all staff in both media, so that everyone would be fully conversant with textual and automated records within their sphere of responsibility, and would be able to deal with the tremendous amount of work expected to come our way.

As with any reorganization that requires people to develop new skills in order to perform their jobs, this decision caused a certain amount of apprehension and anxiety. Some people looked forward to acquiring a new skill; some resisted the idea; most adopted a "wait-and-see" attitude in order to find out what exactly was involved. Staff training immediately became an integral key to the successful development of multi-media archivists, with the focus being on the development of EDP skills by the new division's twenty or more traditional paper-based archivists. We were assured that we were not expected to become instant experts, but that through training and experience we would gradually become more at home with automated records over the next few years. Most of us had some basic knowledge of computers; several staff were more at ease because they already used home computers.

Our training began with an introductory course tailored for Government Archives staff, which featured a lot of hands-on experience. We were blessed with an instructor whose enthusiasm and patience made us eager to learn; consequently, by the end of the three-day course we had acquired a basic understanding of computers and how they functioned. While this course was under way, the division was implementing a local area network and installing personal computers at work stations. We learned how to use electronic mail and Word Perfect software; the opportunity to use a computer regularly made me feel more comfortable with such equipment. I remember feeling quite encouraged and ready to tackle the next round of training; these sentiments were also shared by most of my colleagues.

Next came an extensive in-house course given by former Machine Readable Archives staff on all aspects of EDP records—from providing background on the growth of such records in Canada and other parts of the world to detailing the acquisition process, the appraisal of machine-readable records, their processing, their conservation requirements, the specialized methods for describing such records, and the reference requirements. It was an "eye-opener," to say the least. At the end of the course, I felt that of all the functions an archivist performs, the appraisal of EDP records seemed possible and within my grasp. After all, I had always thought that it was important to understand the nature of the information contained within a computer system; would you not ask some of the same questions asked of paper-based systems? The fact that the information resided in an automated format was significant and required some technical knowledge, but the important thing was to judge the archival value (that is, the evidential, informational, legal, and research values) of the data contained within the system. The in-house course confirmed this feeling.

What was amazing were the steps involved in processing and describing the records. It was not enough to be able to print a label, run a dump of a sample of its contents, and check the codebook; instead, one had to acquire a basic knowledge of JCL (Job Control Language) as well as a statistical package such as SAS (Statistical Analysis System) in order to perform basic processing procedures. JCL was the ultimate user-unfriendly tool. As for statistics, they were

definitely a foreign subject to me and to a number of my colleagues who flippantly remarked that there were reasons why they had never pursued a Masters' degree in science or mathematics. Moreover it was still unclear to me the amount of processing that was actually needed in order to preserve the fragile data.

Subsequent courses in JCL and SAS did not reassure me. Our JCL instructor acknowledged that this was one of the most boring subjects in the world, although necessary to undertake processing of EDP records. He then proceeded to use humour and enthusiasm to impart a general knowledge of this necessary subject; by the end he had made us feel that we knew everything necessary to do our jobs. This was not true of course, but his confidence-boosting approach ensured that we retained enough of the basics to be competent in simple processing.

Each newly-trained archivist was then teamed with a machine-readable records archivist to undertake processing of a data file. At this time, the 1871 census for Ontario was being input, as a special project in collaboration with the Ontario Genealogical Society.<sup>1</sup> As I worked through the steps and put into practice what I had learned, under the patient guidance of one of my EDP colleagues, I actually felt that it was fun to do, especially because at the end of the process I saw in front of me a print-out of a frequency that I had run for a census district in Southern Ontario, an output that provided a range of interesting demographic information on the population of that particular county. I realized how valuable this type of information was and that the fact that it resided in automated form made it extremely useful for all kinds of research. It was this realization that made all the training of the last year seem worthwhile. While it is important to provide formal training if people are to acquire a new skill, it is equally important to provide informal training or opportunities, to allow them to put into practice what they have learned.

While this training was going on, a records schedule for records of the Department of Justice arrived at the Archives. Most of the records were textual in nature, but there was one associated electronic records series, the Central Divorce Registry System. As a training exercise, I was teamed with a former EDP archivist to conduct the archival appraisal of these fascinating and valuable records. It was a perfect complement to the formal training that I had received. As we worked through the appraisal together in the department, there were numerous opportunities to impart knowledge of particular areas of expertise to one another. I appreciated the opportunity of working closely with someone who could pose and answer more technical questions about the system and I learned a lot from the subsequent exchanges.

We were also able to discuss many aspects of our archival work, which was especially valuable since our offices were still in two different locations—not a situation designed to encourage integration of the two media and the staff. I discovered that some of the trepidation and apprehension felt over the re-organization and acquisition of new skills were shared by many of my machine-readable colleagues. It helped just to be able to air these feelings and talk about the division's prospects for success in making multi-media archivists of us all.

In the end, positive attitudes were reinforced by mutual support and help over the more difficult aspects of our job. This experience re-enforced my view that formal training must be followed as soon as possible by practical application, and that the team approach to dealing with both media works very well, by imparting new knowledge and allowing the sharing of ideas. This, in turn, can foster acceptance of the need to change and to acquire new skills. Not all of my colleagues had a chance to participate in a similar project, since some did not have heavy records-scheduling loads responsibilities; I count myself lucky to have had this opportunity.

The Government Archives Division was pre-occupied with training over that year and a half, during which time the acquisition rate dropped drastically, since many machine-readable archivists were heavily involved in training. Partially to provide more experience in appraising and acquiring EDP records, the division encouraged archivists to acquire copies of systems having archival value through the direct transfer method. As a more long-term project, archi-

vists were to research the institutions and their records for which they were responsible, in order to understand their mandates and activities and to identify those areas most likely to produce EDP records. Archivists were to obtain basic information on purpose and content in order to make a preliminary judgement of archival value. These attempts to achieve greater experience with automated records resulted in several significant transfers, such as copies of the Canadian Civil Aviation Registration System (CCARS), a valuable archival record on all aircraft registered to fly in Canada.

This research, however, revealed the complexity and changing nature of information residing in automated form. The EDP records examined varied from tracking systems used to track cabinet ministers' correspondence, to indexing systems designed to control paper-based central registry files, through to large, complex databases containing millions of files and sometimes involving several media. There was a growing realization that the mere existence of vast amounts of data in automated format did not necessarily imply that they were of high archival value; critical evaluation of the information was required. Archivists, after all, often face the task of appraising masses of repetitive, routine case or project files, most of which have no archival value. "Junk is junk," regardless of the medium.

The appraisal exercise required the examination of records in both media, as a number of records were interlinked. This finding confirmed what had been going on in the EDP world during the late 1980s. Survey-type records, or those involving reams of statistical data housed on main-frames were giving way to large, medium, and small databases containing text as well as figures, running on commercial software packages such as ORACLE. Office automation systems were more evident, as were optical disc applications. Supporting technology also was changing. It was even possible to read magnetic tapes on screen without knowing very much about JCL! What a relief! Software packages such as Knowledge Seeker and Research Assistant made it possible to search through automated records using key words or phrases. Clearly the nature of the EDP record had changed; even the terms "EDP" and "machine-readable" had given way to simply "electronic records." All these factors made certain technical skills seem less of a necessity than before.

To address these changes and provide direction to the archivists' work, the division provided guidelines and assigned priorities to the types of electronic records to be acquired over the next five years. These were identified as: operational data that supported the mission or programmes of a government institution; cumulative or longitudinal data; survey data; administrative data; and, lastly, personal computer or related office systems.

One last formal training course on database management was tailored for archival staff. Once again the choice of instructor positively influenced the course content. He possessed considerable experience with EDP systems both within the private sector and with numerous government departments; he also understood the National Archives' mandate and the nature of archival work, in addition to having a good sense of humour and a flair for imparting just the right amount of information to enable us to understand the subject. He helped us with the types of questions to ask of creators and users and constantly reassured us that we did not need to have an in-depth technical expertise to work with these records. It was his view that an archivist should consult EDP professionals as necessary when technical advice was needed during the archival appraisal. This became a very important distinction. In fact, the division was starting to centralize staff with in-depth computer/technical expertise into a unit that could provide assistance to archivists as needed for appraisal purposes. The course proved a tremendous confidence booster for all of us: electronic records were no longer a worrisome mystery, but something that was within our grasp.

As I stated previously, formal training must also be followed by practical experience on a regular basis, otherwise the training is largely wasted. More archivists now were given opportunities to apply their training by working on records schedules covering both media, and by

studying and reporting on the electronic records associated with the institutions for which they were responsible. I was again lucky in being able to practice what I had learned. About two weeks after the last course ended, another colleague and I embarked on the appraisal of several large automated systems maintained by the Royal Canadian Mounted Police. These included the Canadian Police Information Centre system (CPIC), modelled after its American counterpart (NCIC), and the Police Information Retrieval System (PIRS), a sophisticated tracking system not only controlling the extensive hard-copy case files but also used to undertake searches and compile statistics on every crime committed within the jurisdiction of the RCMP. Again I worked closely with my colleague who had come originally from the old Machine Readable Archives Division. Both of us felt that a demonstration of the systems and a chance to talk with the systems managers were essential in determining the value of the information and establishing the link to the paper records. This time I felt I could contribute more solidly to the appraisal because I had a better idea of what questions to ask and was more confident of generally understanding the response. It had taken only three years to get to this point!

Lest I become too confident about my newly-acquired knowledge, I attended an IASSIST (International Association for Social Science Information Service and Technology) conference several months later, where there was as much talk about the technical aspects of systems and programmes as there was about records' contents and research use. I was suddenly pulled back to the reality that I had acquired a certain amount of knowledge, but still not enough to understand completely the technical implications. It is quite true that a "little knowledge can be a dangerous thing." Becoming an electronic records archivist is a continuing education that must be pursued through practical project experience and by reading current literature.

Training, hands on experience, and researching the administrative histories related to automated records systems are not enough to ensure the development of well-rounded multi-media archivists. The research must have a goal or a focus, and then a structure to carry out the goal, which is to acquire the best possible archival record. This view also underlined the acquisition strategy which I referred to earlier. In order to develop this strategy, the National Archives adopted a pro-active approach to acquiring government records. Instead of waiting for government departments to schedule their records, the Archives decided to approach, over a five year period, those institutions it felt had records of high archival value and ask them to draw up records disposition submissions for their records, no matter what the medium. This planned approach, coordinated between the Archives and the institution, would identify archival priorities set by the archivist—which, in turn, are based on the archivist's knowledge, acquired through research, of the department, its mandate, and its records holdings. While records in all media are to be evaluated, in reality textual and electronic records receive most of the emphasis. This means that most archivists will eventually gain actual experience in acquiring electronic records.

We are now only in the second year of this new planned approach. While there have been various bumps and obstacles, there have also been several major successes involving electronic records. Recently, the National Archives and Revenue Canada Taxation agreed that personal income tax data residing in a large automated system would be transferred to the Archives because they had high archival value. It was a major victory, because the Archives had tried unsuccessfully for years to convince that institution to transfer its records. The archivists who worked on this schedule and transfer agreement should be proud of their role, since they had not only to appraise the value of the data, but also to consider the storage and cost implications for the Archives. They were able to call upon computer specialists for technical advice regarding specifications for the transfer of data. This transfer demonstrates that the training in automated systems is now starting to bear fruit, and that the planned approach to acquisition provides a structure for the archivist to work within which will inevitably involve both textual and electronic records.

Most of my examples of coping with electronic records concern their acquisition or appraisal. Of all the functions that an archivist must perform, I think that appraisal is the most important, because it is the first step in the preservation of valuable archival records. The realization that the appraisal of electronic records involves many of the same types of questions as those governing paper-based records systems—we are, after all, appraising information, not systems, no matter what format that information resides in—reassures me that this is possible. Technical considerations must certainly be taken into account, but changing technology has improved our ability to cope with this type of record. As long as archivists can call upon more technically adept computer experts for advice as needed, it is possible that most of them can cope with records in both media. In other words, archivists do not have to know everything about the medium; in fact, it is probably impossible for them to do so.

That is not to say that the control of electronic records after their transfer to the archives is not important; it is. However, it is not necessary for archivists to undertake all the processing themselves; other individuals possessing computer skills can do this work under their general direction. Staff in the Government Archives Division are at present only feeling their way in the custodial function; archivists are testing recently-developed accessioning procedures. The advent of descriptive standards will no doubt influence the way we describe these records; right now, most archivists would agree that it is necessary to integrate the description of electronic records with textual ones, in order to provide context for the whole record, not just one aspect of it. How to do this has yet to be determined.

I hope that I have been able to draw attention to certain key factors that will ensure that traditional paper-oriented archivists are capable of becoming electronic records archivists. Relevant training, practical hands-on experience, using a team approach, encouraging informal discussion amongst staff, and providing clear direction and focus to archival work are all factors influencing success. Those who are managers or supervisors must remember that they are dealing with people and limited resources. There will be some individuals who are unable to cope with electronic records; we must accept the fact that people have different strengths. Management should strive to create an atmosphere that will encourage the desire to learn new skills, for this is easier if people are willing and eager to learn, and try not to get too discouraged when setbacks occur. A number of archivists before us have had to face the same challenge. The process will be, in a number of ways, a humbling experience; therefore, do not set unrealistic expectations for yourself or others. Be assured that with time and experience, you will begin to feel more comfortable with electronic records. If I can do it, then anyone can!

#### Notes

- \* This article is based on a presentation to the 56th Annual Meeting of the Society of American Archivists in Montréal, Québec. The paper was part of the session entitled *Archival "Retreads": Becoming an Electronic Records Archivist*, 15 September 1992.
- 1 See David L. Brown, et al., "Historical Research Using Computer Files from the 1871 Census of Ontario," *Archivaria* 33 (Winter 1991-92), pp. 161-72.