Defining Electronic Series: A Study*

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RÉSUMÉ Cet article explore la façon dont les séries de documents électroniques opérationnels, c'est-à-dire les séries de documents telles qu'elles furent créées, conservées et utilisées par les créateurs au cours de leurs activités, sont transformées par le processus d'acquisition en séries archivistiques. L'auteur soutient que les postulats qui sous-tendent le processus d'acquisition et qui furent développées dans le contexte d'un environnement papier auraient besoin d'être réexaminées afin d'être utilisées dans un environnement électronique en s'appuyant sur des exemples tirés de ses récentes expériences aux Archives de l'Ontario. L'article se termine sur des observations quant à l'impact de l'acquisition de séries de documents électroniques pour les institutions d'archives.

ABSTRACT This article explores the way operational electronic series, i.e., series of records as they were created, maintained, and used by creators during their normal course of business, are transformed into archival series by the acquisition process. It contends that the assumptions behind acquisition processes developed in the paper environment may need re-examination for use in the electronic environment, using illustrations drawn from recent experiences at the Archives of Ontario. The article closes with some observations on the impact of acquiring electronic series on archival institutions.

Taking records into custody at the Archives of Ontario, i.e., the process of acquisition, was one that was developed in the paper environment. And it is well understood that operational series acquired by the Archives are transformed in some way through this process. The transformation obviously includes a physical aspect – the actual removal to the Archives of either some or all of the creator's records series. Further to that, files and items may be eliminated from the series through culling or sampling. These activities are not generally assumed to alter fundamentally the essence of the series, that is to say, that the relationships of the files within the series, and the relationship (if any) between series acquired from the same creator remains intact. Preserv-

ing these relationships are rightly seen as context that gives value and meaning to the records.[1]

This process is founded on the assumption that operational series actually exist. Support for this assumption can be found in many sources. Central writers on the archival endeavour, including Jenkinson and Schellenberg define series by their relationship to functions. Any given series is also defined by internal characteristics such as filing structure or form of record.[2] More recently, Miller continues along these lines as shown in the illustration below.

Arrangement by Provenance
    Archival record groups and manuscript collections
    Subgroups (archives and manuscripts), sub-subgroups ...
        Series documenting activity/function

Arrangement by filing structure
        Series of records filed together
Subseries, sub-subseries ...
    File units
    Individual documents and items

Note: The same series will often represent arrangement by both provenance and filing structure.[3]

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1 The glossary of the Canadian *Rules for Archival Description* define series as "File units or records within a fonds arranged systematically or maintained as a unit because they relate to a particular function or subject, result from the same activity, have a particular form, or because of some other relationship arising out of their creation or, arising out of their receipt and use."

2 "A single Archive series may refer into a single function or into two or more, or it may refer sometimes into one and sometimes into another; but refer it must into one at least." Hilary Jenkinson, *A Manual of Archive Administration* (London, 1937), p. 111. Jenkinson develops the idea of a physical or internal quality to a series at some length, culminating (p. 116) in his conclusion of "original" and "made" series accompanied by "miscellanea." Schellenberg writes that "Records may also be grouped on both an organizational and a functional basis by their division into series. A series may be defined as a group of documents, folders, or dossiers that has been brought together for a specific activity. It may be arranged either according to a methodical classification system or according to the form or origin of the documents; or it may be informally accumulated to meet a specific administrative need." T.R. Schellenberg, *Modern Archives. Principles and Techniques* (Chicago and London, 1956, reprinted 1975), p. 60.

3 Frederic Miller, *Arranging and Describing Archives and Manuscripts* (Chicago, 1990), p. 60. Italics supplied by author.

The italicized portions shown here illustrate that series are identified by provenance ("documenting activity/function") and by filing structure ("records filed together"). Prior to the table illustrated above, Miller cautions that:

Like provenance and original order, the concept of levels of control is a necessary oversimplification. The type of straightforward organization and filing hierarchies it assumes apply mainly to records predating the mid-twentieth century. It becomes less useful as networks of relationships replace hierarchies in both organizations and filing systems.... Such changes mean that archival thinking about levels of control should be modified, but not replaced.[4]

Cook is more specific, observing that "the usual archival assumption that the arrangement of records reveals their contextual provenance and thus is the key to their description may no longer be adequate in the Information Age."[5] Nesmith's comments on custody and transmission point to the central issue addressed by this article.

... it may well be that the record's existence and characteristics have been shaped far more powerfully by what has happened to it during the custodial and transmissive stages of its life, as well as the archiving process.... But that is not something preordained, but rather an outcome determined by the archivists' interpretive, contextualizing research into provenance."[6]

The following illustration is a rough attempt to summarize the similarities and differences between operational and archival series. It sets out some of the qualities of what might be considered a series of records, the correspondence of Ontario's premiers for roughly the last sixty years.[7]

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4 Ibid., p. 28. This caution can be traced back to Jenkinson's conclusions about the practical realities of arranging records: "The Modern Administrator, helped by Typewriters and Transfer-papers which make the taking of copies easy, by the modern facilities of transit for minute papers, and by the invention of card-indexing which enables a working index to be kept continually up to date, has simply gone back to the old system of a common stock of *Miscellanea* differentiated out into numerous files on the basis of subjects – the subjects with which his office is dealing: he may or may not, by means of the references given to the files or jackets, differentiate them again into classes of business done corresponding roughly with the functional divisions of the office." Jenkinson, pp. 108–109.

5 Terry Cook, "The Concept of the Archival Fonds in the Post-Custodial Era: Theory, Problems and Solutions," *Archivaria* 35 (Spring 1993), p. 26.

6 Tom Nesmith, "Still Fuzzy, But More Accurate: Some Thoughts on the 'Ghosts' of Archival Theory," *Archivaria* 47 (Spring 1999), p. 146.

7 The "series" represented here is in fact many series. The correspondence of each Ontario premier is arranged as a series unto itself. This "conceptual" whole is presented here for the purposes of illustration.

Transformation of the Premiers' Correspondence series, 1943–2002

Dates	Series	Files	Items	Filing Structure
1943–1961	Operational	Subject files	Paper documents	Files arranged alphabetically by file title; multi-year content; correspondence register introduced in 1956.
	Archival			
1961–1972	Operational	Subject files	Paper documents	Files arranged alphabetically by file title; single-year content; card index (name and subject); and a correspondence register.
	Archival			
1972–1989	Operational	Subject files	Paper documents	Files arranged per classification system; single-year content; card index; and correspondence register (beginning in 1985 index was by name only and the register ended).
	Archival			
1989–1993	Operational	Case files (incoming and outgoing, notes)	Paper documents	Files arranged numerically; tracked electronically.
	Archival			Files arranged numerically; selected data fields from tracking system in a data table.
1993–Dec 1997	Operational	Case files (incoming and outgoing, notes)	Electronic documents	Files maintained by (proprietary) system; plus additional relationships (e.g., tracking, priority).
	Archival	N/a[8] (sampled)	Paper documents	Printed indexes for sampled files and for entire correspondence database.
Dec 1997–	Operational	Case files (incoming and outgoing, notes)	Electronic documents	Files maintained by (proprietary) system, plus additional relationships (e.g., tracking, priority).
	Archival[9]			Files established by naming convention for digital components, profile and tracking data captured separately; to be sampled.

8 The correspondence from this period was operationally maintained in a system which did not allow the export of its contents, either to the successor "Linkworks" system or to an "open" environment for preservation at the Archives of Ontario. Neither the creating office nor the Archives was particularly happy with the ensuing "paper dump" but the only alternatives to that option were maintaining the obsolete operational system or complete loss.

9 The Archives of Ontario has not acquired any records from this system as yet. The information provided here is based on planning meetings.

It is worthwhile noting that until 1989 when computer technology was introduced, the Archives of Ontario was able to acquire this series in the same physical format and maintain the same core relationships that they had in the operational environment. Furthermore, handling accruals to this series was a straightforward process, requiring none of the (sometimes) protracted negotiations that have been the norm since 1993.[10] With the advent of a computerized tracking system in 1989, the physical arrangement of the records (still paper) changed so as to effectively render items inaccessible (filed numerically) *without the tracking system*, even though the physical relationship of the incoming and outgoing was preserved. The tracking data was acquired and preserved in part as a finding aid for the correspondence.

Beginning in 1993 the operational series was electronic – the creating office had "gone paperless." A system of assigning a priority code to each case was introduced at this time as well, suggesting that the file structure (incoming, outgoing, plus notes) may not be the only relationship that needs to be preserved, perhaps not even the most important one. These records were contained in a proprietary system which did not allow the export of the records in a way that preserved file integrity. This is illustrated by the initial acquisition in 1995 of correspondence dating from 1993 to 1995. The record schedule called for a transfer to the Archives of a sample of the correspondence. This acquisition included the entire incoming correspondence. Separately transferred was an archival selection (based on the sampling plan) of outgoing correspondence and a number of printed indexes, generated by the correspondence system. File integrity was completely lost in the case of incoming correspondence items whose matching outgoing items were excluded from the archival sample. Even for the sampled outgoing items, file integrity was severely disrupted as each of these items must be physically matched up with the incoming item to recreate the whole "file."

Somewhat happier are the circumstances of the second acquisition from this system, acquired in 1997. With greater experience and under far less pressure than the earlier transfer (which took place during a change of government), the Archives acquired its selection of files in paper format, but file integrity was maintained because the creating office printed out the incoming together

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10 The negotiations referred to here often centre on revising existing records retention schedules to accommodate new circumstances. What is new is that archivists have to negotiate what will actually be transferred and how this will be done. As of the time this article was written in 2002, the Archives' experience has been too limited to support the establishment of standard practices for transferring electronic records. In the absence of a clearly defined business process (which, in the paper environment, was only reflected in the acquisition process anyway), the Archives has yet to determine how best to acquire and maintain information gathered during these negotiations. Currently the Archives of Ontario records this information in informal notes of meetings or in e-mail exchanges with the transferring office. These documents are maintained in the collection file that is kept for each series.

with the outgoing. In both instances, the profile data was drawn upon to generate indexes as finding aids.

In 1997 the creator moved to a new system, from which nothing has yet been transferred. Current plans are that acquisitions from this system will be in electronic format, with file integrity provided by naming conventions used for the digital components of each file. The matching document profile and tracking data will be acquired at the same time.

The 1995 and 1997 acquisitions, because of the unfortunate technological circumstances which complicated them, throw into high relief some of the aspects of the transformation of the operational series into the archival one. In particular, the 1995 acquisition had about it the feel of a salvage operation as the archivist and unit manager looked for ways to ensure that some residual value remained to the records. It is perhaps most important to recognize the change in 1989, when subject files containing documents other than correspondence were succeeded by case files (with profile and tracking data). The change in file construction may reflect a change in the way correspondence from Ontarians relates to other files used by the Premier, in setting government policies, for example. The physical proximity of the records within the old subject file structure suggests that correspondence may have directly influenced decision-making and policy direction (at least to the same degree as any other record in the file). That comforting (but unsubstantiated) implication disappears with the new case file structure. It might be presumed that the electronic tracking data allows correspondence to play a greater role in policy-setting decisions than was possible in the paper environment.

Similarly, evidence of the relationship between the files themselves disappears with the transition from subject files, governed by a classification system, to numerically ordered case files. The effect of the earlier classification system may be replicated (expanded? reduced?) in the profile data or it may have disappeared, or it may have been replaced by an alternative relationship based on a new process. Acknowledging the loss of the physical clues provided by the composition of the (pre-1989) subject files is not the same as saying that the relationships they reflected no longer exist. It may be that the characteristics of a series of physical, subject files, because they can be stored in the same way at the archives, are sufficient in themselves to communicate all necessary relationships. In the electronic, case file environment this is clearly no longer the case, even though the preservation of a particular physical relationship (i.e., matching incoming with outgoing correspondence) has, with the one exception in 1995, been achieved.

The relationship with the functions or activities to which the record relates is what has become arguably less clear in the electronic environment. The communication between citizens and their chief minister on many topics may be said to be an "unstructured" function or activity. Unstructured because it is hard to know the relationship between communication and decision-making

or policy development for example (representative democracy assumes more or less that there is some relationship between the will of the governed and the policies set by their elected representatives). Indeed, there is some irony in that the subject files created up to 1989 are considerably less precise in terms of what they contain but may better illuminate the creator's intended relationships between activities (and thus records) than the highly structured correspondence files created since 1989.

A second illustration throws additional light on the relationships of records to processes or activities. The Archives has recently acquired the records of the inquiry into the tainted water tragedy at the town of Walkerton.[11] The Commission's mandate was to inquire into the circumstances leading to the deaths and illnesses in Walkerton, the cause of those events, and any other relevant matters "in order to make such findings and recommendations as the commission considers advisable to ensure the safety of the water supply in Ontario.[12] To fulfil this requirement, Commission staff needed to review large numbers of records from across the Government. The Commissioner issued a number of calls for records relevant to the inquiry's mandate. An estimated one million documents were turned over as being potentially relevant.[13] These documents were previewed by Commission staff. A short-list of those that required a more detailed review, an estimated 200,000, were scanned, profiled, converted to electronic text,[14] and loaded into a database by a special office within the Ministry of the Attorney General with the responsibility of coordinating the government's response to the Commission's requirements. The documents were provided in this way, solely in electronic format, to the Commission. The supplied profile data, including elements such as the date and source of a document, were augmented by Commission staff to include fields for relevance and counsel comments, among other things. The Commission's database provided critical research support by simplifying access to the information contained in these documents derived from many different sources in the government. At first glance, this database appeared to be a series, based on its specific operational function of informing the decisions of

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11 "In May 2000, Walkerton's drinking water system became contaminated with deadly bacteria, primarily *Escherichia coli* O157:H7. Seven people died, and more than 2,300 became ill. The community was devastated. The losses were enormous. There were widespread feelings of frustration, anger, and insecurity." The Honourable Dennis R. O'Connor, *Report of the Walkerton Inquiry: The Events of May 2000 and Related Issues*, Part One (Toronto, 2002), p. 2.

12 Ontario Order in Council 1170/2000, dated 13 June 2000, reproduced in the *Walkerton Inquiry Report*, Part One, Appendix A.

13 The process by which documents were requested by and provided to the Commission is outlined in section 14.3.8, *Walkerton Inquiry Report*, Part One, pp. 482–86.

14 The scanning process provides an image (akin to a photograph) of the page. The image is then itself "scanned," using optical character recognition (OCR) software. The software estimates what alphabetical characters are being graphically represented and then compiles a text file.

the Commissioner and his staff, on the type of records it contained, and by the way those record were maintained.

It is clear from the values indicated in the relevance field (high, medium, low, or blank), that some records in the database were pertinent to the investigation and others were not. Comments added by Commission counsel also suggest that the relationship of some documents to the decision support function differed from the relationship of other documents to that function. If series are what emerges at the procedural intersection of business with record-keeping, then the view that the database itself is a series comes into question. It seems more likely that the intersection of the Commission's research and decision-making processes with the records did not take place with the database as a whole, but rather document by document. Traces of those intersections reside in the profile data. The database itself was simply a physical container akin to the storage facility for paper records of an archives. Given the way the database was used, there are other more important relationships that must be preserved.

One might reasonably ask why acquire and preserve the database at all given that the original documents all exist within the operational series from which they were drawn. The answer is important to determining the context and therefore value of this set of documents. Records of the originating offices, i.e., in the record series created by their own processes and for their specific purposes, have no relationship with the business of the Commission. Similarly, the relationship which exists within the database between records from unrelated sources (e.g., records from the Ministry of the Environment with records from the Ministry of Health) would be lost. These considerations imbue the contents of the database with a quality of uniqueness.

The point of the preceding paragraphs has been to look at of the database in an attempt to determine whether it can be considered itself a series, or whether it is simply a container holding one or more series. It remains now to explore the inside of the database to see what can be discovered there about how the Commission's business and record-keeping processes intersect.[15]

Starting with the Commission's record-keeping processes, a key observation is that the Commission created none of the documents which populate the database, at least not in the conventional sense of record creation. Those documents were supplied for the Commission's informational (i.e., viewing) pur-

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15 I am indebted in particular to Chris Hurley and in general to contributors to the aus-archivists listserv for any insights which emerge in the following paragraphs. Two threads were of particular interest: "Is workflow a record?" (13 June 2002) and "Subject and Functional Classification" (1–3 August 2002). In addition, see an emerging series of articles on the theme "Relationships in Records" by Hurley for the *New Zealand Archivist.* The first two, entitled "What, if Anything, Is a Relationship?" and "How Do I Own Thee? Let Me Count the Ways" respectively, are available on the web at <http://www.sims.monash.edu.au/research/rcrg/publications/>.

poses only.[16] Since it is known that the records were used by the Commission and that the documents themselves could not be created or modified by the Commission, evidence of the Commission's record-keeping processes as they pertain to the database exist, if at all, within the profile data.[17] The following paragraphs examine only the relevance and source fields within the profile data for evidence of where the commission's record-keeping and business processes interact.

The relevance field has only four possible values: high, medium, low, and blank. This field was completed by junior lawyers employed by the Commission. No manual or set of detailed criteria existed for them as they reviewed the documents. Instead, the criteria shifted as the Commission's research moved from one aspect of its mandate to the next. It is possible therefore that the value indicated for any given document represents its relevance only to the last aspect of the investigation. It is more likely, since the business process does not appear to have been strictly defined or controlled, that a high relevance value for a document in relation to one aspect of the investigation was left unchanged when the investigation moved on to a different aspect where the same document might have had a low relevance or not been considered relevant at all. In either case, there is a relationship that exists between documents that were relevant (at some level and at some point) to the investigation, which separates them from documents where the relevance field is blank. Because it is reasonable to infer that relevant documents support investigations and inform decision-making, whereas irrelevant documents do not, this relationship could be a basis for a series.

An archivist might well consider the source field to be a natural one to examine for evidence of record-keeping processes because of its connection with the concept of provenance. In the context of the Commission's database, the source field indicates the source of the document, i.e., the ministry and office within the ministry which originally created the document now present in the database. Establishing series of records related by a common source could be done in at least two ways. A series could be formed from all the records received from the Ministry of the Environment, another from the records received from the Ministry of Health, etc. There is no evidence from

16 Equally important to observe is that the database formed only a part of the record-keeping activities of the Commission. Among other records, which exist in electronic and paper formats, are found transcripts of hearings, correspondence, and of course administrative records. The analysis that follows is thus incomplete, in that it does not examine the whole of the record-keeping processes of the Commission. Nevertheless, I believe that it is illuminating and relevant.

17 The frequent use of keyword searches of the OCR versions of the documents to find topics, subjects, or people explains the presence of these files within the database. The use of the OCR versions of the texts for searches suggests that the text versions of the documents functioned as a finding-aid and do not form part of the record-keeping processes of the Commission, except tangentially.

the Commission's business processes that the Commission conducted its business that way; however, this field is necessary for supporting the identity and integrity of the records. A second approach would group records received from policy branches (regardless of ministry) as a series, records from offices responsible for reporting on health matters as another series, and environmental matters as a third, for example. The values entered into the source field are not controlled terms and consist of abbreviations of the source office, e.g., a document received from the London office of the Ministry of the Environment would be entered as MOE LON. Upon examining these terms, it soon became clear that they do not support the relationship suggested above. It can be concluded that the values entered for this field are not record-keeping values.

It is not the intention of this article to resolve what series (if any) exist within the database. The purpose of the foregoing was an attempt to perceive what operational series, if any, exist within the database. The next section looks at how the database was transferred to the Archives and what effect that process had on the traces of the Commission's business and record-keeping processes.

The transfer of the database to the Archives focussed on both the physical means of getting over fifty gigabytes of data from the Commission to the Archives of Ontario and the way in which the data itself (scanned image files, text files, and profile data) was exported from its proprietary environment. The details of the former are irrelevant here, except to note that they focussed attention on the database as a whole, without close regard to its qualities as a series. The Archives of Ontario required that the scanned images, text, and profile data for a given document be linked in some way. The Commission's database administrator achieved this through the use of a file-naming convention, an approach very similar to the one outlined for future transfers of premiers' correspondence. In effect, the records came over in three groups: the profile data,[18] the text files (containing the OCR text of the scanned image), and image files. Part of the profile data include the name of the text file. The file names for the scanned images followed the same convention as the text files. In this way, a linkage between the three components of the database was maintained.

The impact of these transfer conditions on the traces of the Commission's business and record-keeping processes is hard to determine, given the minimal documentation kept to explain and control these processes. However, the record-keeping traces found within the relevance and source fields provide a

18 The profile data was transferred in both .dbf and ascii formats. The .dbf format is preferable even though it is an industry rather than an open standard. The format loads easily into another database application (e.g., Microsoft Access). The ascii (delimited) version, while an open and readable format, does not preserve table headers. When it was loaded into a standard application, in this case Microsoft Access, errors occurred (which could be corrected but required far more manipulation than the .dbf format).

useful focus for a preliminary assessment of the impact of the transfer on the records themselves.

On the positive side, the values of the relevance and source fields all arrived unscathed at the Archives within a database table. On the negative side, any record-keeping qualities of the database application itself were likely lost, unless they could be restored by simply uploading the exported data back into a database application. Complementing the record-keeping processes, of course, were the Commission's business processes. Knowing these in detail may be more critical in the electronic environment than it was in the paper environment, where archivists could often rely on the physical relationship of records to communicate much of their business context. As there is no physical relationship in the electronic environment, the clues that this relationship may have provided in the past will not be available to archivists. As with its record-keeping processes, details of the Commission's business processes are few. It is known that two reviews were undertaken: the initial one to determine which documents to include in the database, and a final one for relevance. These reviews illustrate a winnowing of the sources of information. The transfer of the entire database did not negatively affect the first review. Its impact on the second review is unknown because the role played by functionality of the application itself is unknown. But since the relevance data has been preserved, one might reasonably conclude that the trace has been preserved, even if the functionality is unavailable due to the circumstances of the transfer. The other known business process is based on the scope of the Commission's mandate which involved diverse research objectives, from investigating the biology involved in the outbreak to the impact of government cutbacks on services and structures. Since the way research was undertaken and conclusions were reached is known only in a general way, i.e., sources were consulted, hearings were held, etc., it is not clear whether this business process had any record-keeping impact beyond that discussed above under relevance. The relationship of the scanned documents with the hearings is also unclear. The Commission's research process remains as obscure after the transfer as before it and thus the impact of the transfer cannot be definitively determined.

In examining the relevance and source fields as bases for determining series, it was observed that a relevant record could equally relate to two specific aspects of the Commission's investigation, i.e., it could legitimately belong to two (or more) series. Capturing the creator's business and record-keeping processes in a descriptive record so that the intersection between the creator's business processes and the archival series is made clear, may be the biggest challenge facing archivists in the electronic environment.

It is also worth asking whether all this is simply too much trouble. While the cases outlined above may have flaws in the way series have been defined, it is clear that the database as a whole, an undifferentiated collection of documents from many sources, is not a series. It is only those records contained

within the database that are incorporated into the activities of the Commmission that have become records of the Commission. If a record was not used then it has no context in terms of the Commission's mandate and functions and no basis for a relationship with other records utilized by the Commission. Those relationships cannot be captured at the record level but only at the file and particularly at the series level.

The foregoing has looked at bodies of documents to identify the series within them. Practice at the Archives of Ontario does not generally go into this level of detailed review for two reasons; firstly, time does not permit this examination and secondly, much series-level arrangement, especially the series definition, occurs through records retention scheduling, before most acquisitions come to the Archives of Ontario.

Most records come to the Archives of Ontario from its parent organization, the Ontario government, under the authority of approved records retention schedules. Each schedule represents one or more series of records and provides retention and disposition information in addition to other information that identifies and describes characteristics of each record series. The schedule form in use in the province focuses primarily on representing the records because they are the things being managed, and over what the schedule has authority. Any information about business processes is captured in the series title and description fields. Record-keeping process information may also be found in the description field, but there is a specific "information management" section for capturing these details. Generally speaking, this process is based on an assumption that records exist only in one series and that it is appropriate to apply one set of retention and disposition rules to all the records.

The creation of schedules is the responsibility of the creating offices, but a schedule comes into force only after the Provincial Archivist has signed it, indicating her approval of the appraisal undertaken by Archives of Ontario staff and the resulting final disposition statement. At the Archives of Ontario, appraisal is generally based on functions and takes place before (sometimes decades before) records are actually transferred into the Archives custody. This means that the appraisal process does not generally address the feasibility of preserving the records, given that the technological environment can change several times within the indicated retention periods. Feasibility can only be addressed at the point of transfer.

If it is true that in the electronic environment it is more likely that a record may belong in more than one series at the same time, the validity of the Archives of Ontario's scheduling process (at least as it is currently executed) may cease. The records schedule for the Premiers' correspondence series, described above, defines the records but includes few details of the business processes of the creating office. The 1989 transition in series structure (subject files organized alphabetically to numeric case files containing only documents

related to the correspondence), occurring at the same time as the series moved from purely paper to a mixed (paper and electronic) medium is a noteworthy coincidence. The void left by the disappearance of the physical relationship of correspondence up to 1989 is filled by one or more relationships recorded by the profile (i.e., tracking) data. This transition may indicate a considerable change in the way the operational business and record-keeping processes intersected. Therefore, implementing a transfer of correspondence governed by this schedule as a purely mechanical process – in this instance to ensure that incoming is matched with outgoing using some profile data – may be simplistic and result in critical loss of context.

When the Archives of Ontario's Electronic Records Programme was established in 1999, one of its first priorities was the development of an effective means to inventory and schedule electronic series. Without such a process – schedules governing electronic series would not be created and electronic records would be inconsistently managed under obsolete schedules or not come under a records management regime at all. Scheduling activities in the past two and a half years are a measure of the Programme's success, growing from a handful of scheduled electronic series to well over 200 electronic and mixed series now identified on new records schedules across the government. Coinciding with this increase in scheduling of electronic series has been an almost constant revision of the scheduling form itself. Specific problem areas include how to describe electronic series, how to distinguish between operational and transitory records within a mixed (paper and electronic) series, and how to relate records to indexing or tracking data where retention requirements differ for the two. Generally speaking, the revisions to the schedule form are motivated by its inability to satisfy the demands placed upon it by the three business processes (records management, archival appraisal, and acquisition) that it primarily serves. Much less information is required by the scheduled office for its records management purposes than by the Archives of Ontario to support its appraisal processes.[19] In terms of acquisition it is not always clear what exactly will be transferred. If, as is often the case, electronic records are in an operational system which will not (cannot) be maintained by the Archives of Ontario, then how will the records be extracted? For example, it is difficult to fulfil the requirements of a schedule representing a series of records at a Web site that has been appraised as archival. The schedule does not indicate whether the "source" file (HTML marked ascii text accompanied by the appropriate image files) should be transfered or whether the Web site should be captured using some sort of Web capture tool.

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19 This has led to tension on occasion. Currently records management is provided within the Ontario government on a fee for service basis. It is the office being scheduled that is charged, not the Archives of Ontario. Rules and processes governing destruction of records without archival value are left to the creating agency to address.

Event-driven retention requirements can contribute to this uncertainty. A recent project to identify all electronic and mixed series scheduled since 1999 designated as archival, showed that of the 211 electronic and mixed series, forty-two are to be transferred to the Archives – almost exactly 20%. Of these forty-two series, the retention periods of thirty five are time-driven (e.g., current fiscal year plus ten years). For the remaining seven series the retention requirement is event-driven (e.g., until no longer required) – the phrase often used is "until superseded."[20] It has become clear that "until superseded" means different things to an archivist, to a programme area manager, and to an IT support manager. To date, experience has shown that "until superseded" usually means either until the system (not the records) is superseded, or until specific records (not the series as a whole) are superseded. Where systems have been superseded, the records or at least some portion of them, have simply been imported into the successor system. The only model developed to date for implementing transfer of records superseded individually has involved the creation of an "archiving" databank, to which the creating office shunts records as they are superseded.[21]

Another growing records management initiative at the Archives of Ontario in the last few years has been the development of common schedules. These schedules are developed to address similar record series regardless of creator, i.e., they may link records to a function or business process (e.g., accounts payable) but they do not link records to any specific creator. The retention schedule which governs the records of public inquiries, such as the Walkerton Inquiry, is one such schedule. The "series" it represents is comprised of the operational records, as opposed to the administrative records, of a commission. Business and record-keeping process details are absent from this schedule and must be sought elsewhere.

The apparent effect of this scheduling process on the Archives of Ontario, at least in cases where electronic records are designated to be transferred to the archives, will be that archivists must be sensitive to the relationships within bodies of records that may lie beyond an obvious relationship such as matching incoming with outgoing correspondence. Archival preservation does not dictate that every relationship must be preserved, only those relationships that uphold the archival value of the records. Likewise, archivists may have to steer

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20 The thirty-five series were compared with their retention requirements to determine whether a flood of electronic records would arrive at the Archives of Ontario at some point. However, the results showed no flood but rather a gradual increase over the next ten to fifteen years. According to existing schedules, in any given year over the next fifteen no more than four new electronic series will begin transfer to the Archives of Ontario.

21 To date the Archives of Ontario has not received records created in this way.

clear of seeing relationships that may be plausible, but in fact are not defined by any business process of the creator.[22]

Equally challenging may be accurately discerning the relationships within mixed (paper and electronic) series. For example, a retention schedule representing a body of records created and maintained around the appointments and scheduling function of a former premier identifies two main components: 1) a hard-copy body of files of appointments organized chronologically by week, with a file containing notes and other documents detailing each appointment, and 2) a database, presumably with calendaring and other task management capabilities. The final disposition indicated on the schedule was "transfer to archives." When negotiating the actual transfer of this series, it was decided to take only the hard-copy records because they are complete (in the sense that they cover the entire period to be documented), accessible, and preservable. The body of paper records appears to fulfil all the requirements of a record series independently of the database. But there are almost certainly relationships for these records other than the chronological one provided by the physical arrangement of the paper records, such as relationships by geographic distribution of appointments, or by ethnic community. Such relationships will very likely be important to a working politician. Traces of those relationships may only reside within the database. Thus one might conclude that although the archives acquired all the records, it only acquired one of the series.

Where clear evidence of the creator's business and record-keeping processes are lacking and must be surmised by the appraisal and acquisition archivist, acquiring (or not) the whole database may be the most efficient use of resources. The components of the series will at least be preserved, in conjunction with what is known of those contained within the descriptive record. The difficulty will be in adequately and fully representing these series in archival descriptions. It is beyond the scope of this paper to assess the impact of acquisition on description and reference, but it seems likely that the difficulties being encountered in representing series on schedules will be similarly reflected in archival descriptive representations. If the administrative and descriptive records that archivists create to manage and represent their holdings are going to change (very likely will change since it seems that every aspect of archival work changes when it comes into contact with the electronic environment), then the detailed analysis of the appraisal and preservation processes by the InterPARES project provides an invaluable basis for managing changes in archival record-keeping.

22 Archives staff had an interesting meeting with managers of ministry correspondence units. A draft common schedule had identified the profile and tracking databases maintained by these units as a series unto itself based on an assumption that the databases were used for business activities such as resource allocation planning or trend analysis, surely a plausible assumption. The managers assured us that none of them used the database in that way, at least not at this time.

Do archivists have the necessary skills to analyse business processes? Recently a draft Australian standard for the analysis of work processes from the point of view of record-keeping was released for comment.[23] Such tools may become commonplace in the expanding archival toolkit. Skilled analysis of business processes would be invaluable for representing electronic records on retention schedules and in archival descriptive records.

While many archivists agree that the profession is changing and will continue to change because of the nature of electronic records, it is not yet clear where all those changes will occur. The limited value of relying on organizational hierarchy as an aid to defining series has long been established.[24] This article has attempted to show that, as with organizational hierarchy, a simplistic, physical representation of context may actually devalue records. If the value, expressed as context, is not made explicit, there exists a real possibility that it will be lost. The process of acquisition, which focuses heavily on technological aspects of the data being transferred, must be governed by the requirements of preserving the relationships that give value to the records. The research and debate around the "recordness" of electronic records makes it clear that archival notions of what a record is are being clarified. Archival understanding of business processes within the electronic environment may also need to be explored to help determine the "series-ness" of series, if you will. Given the reliance on series as an intellectual unit of control both for records management and for archival administration (collection management and reference), and the increasing reliance on electronic records by archival institutions themselves to manage their collections, it may be that archival business processes themselves may need to be revisited, not the least of which would be to ensure that the intersection between archival business (including acquisition) and record-keeping processes and the way these affect the records being acquired is well understood. It is clear that the acquisition of records so that their value is unimpaired is an archival business process, whether it is fulfilled by a designated archives or any other agency. In the paper environment the stubborn characteristics of the records as physical objects limited the impact of the transformation from an operational environment to an archival one. The impact of that transformation was mitigated further by the familiarity of archivists, records creators and archival users alike with the paper medium. In the absence of stubborn physicality and a general understanding of the electronic medium, archival electronic series will not be transferred from the originating office. They will be created solely through the archival business processes of appraisal, acquisition, and description.

23 Standards Australia, Subcommittee IT-021-04. Draft for Public Comment: Australian Technical Report *Work Process Analysis.* Beginning date for comment: 27 July 2002.
24 See Miller's cautionary statement in note 4 above.