

# STRATEGIES FOR MANAGING ELECTRONIC RECORDS: A NEW ARCHIVAL PARADIGM? AN AFFIRMATION OF OUR ARCHIVAL TRADITIONS?

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## INTRODUCTION

Please consider the following statements by three of the most influential and respected commentators on electronic records management.

“This change [in appraising electronic records] is not a refinement or slight tinkering to accommodate new realities, but a reorientation in what archivists do—a new archival paradigm, as Charles Dollar noted in his concluding address to the 1992 International Congress on Archives in Montreal on the impact of information technology on archival theory and practice. We must get our archival heads out of the sands of practices devised for medieval charters and papal decrees. We must realize that clinging to old practices in light of the volume of new records is *not* a noble defense of principle or archival tradition, but an act of willful neglect.”<sup>1</sup>

“The UBC-MAS research project was undertaken to test the validity of traditional diplomatic and archival concepts in the brave new world of electronic records. The conceptual analysis of electronic records and the project’s findings confirm that the concepts continue to have resonance and, in fact, provide a powerful and internally consistent methodology for preserving the integrity of electronic records.”<sup>2</sup>

What is a practicing archivist to make of these conflicting statements? In one case we are asked to consider adopting a new archival paradigm for managing electronic records,<sup>3</sup> and in the other we are advised to seek answers by rereading our Jenkinson (in the case of the UBC statement quoted above) or Schellenberg and returning to our archival roots. Where does one start in the quest to become an informed player in electronic records management?

In this article some of the critical issues and prominent strategies pertaining to electronic records management are reviewed, and a conceptual framework

from which to begin the quest to become an informed player is created. More specifically, the article includes summaries of the concepts and strategies proposed by those archivists, on the one hand, who advocate employing traditional archival methodologies to manage electronic records, and those, on the other hand, who recommend reengineering the management process and developing and implementing new techniques and methodologies. In an attempt to make this review as pertinent and familiar as possible, these ideas are examined in the context of three archival functions: custody, appraisal, and description. The goals then are to examine the broad issues and to provide a type of roadmap to prominent management strategies for electronic records, particularly for archivists who are just beginning this journey. In the process, however, recognize that often complex arguments are somewhat simplified and reduced, but hopefully not distorted or taken out of context. For those readers who seek to construct a fuller, more textured picture of the issues or strategies under review, numerous footnotes containing notes and citations are provided. It should also be noted at the outset that all these issues and strategies can be applied to varying degrees to paper as well as to electronic records. In fact, some of the theories and methodologies examined in this article were advanced well before the real impact of electronic records was felt or perceived. In most cases, however, it was the emergence of electronic records that has provided the impetus for a fuller and more urgent discussion of the issues. Finally, be advised that the choices before the reader do not constitute an either/or decision-making situation. Indicative of this is the fact that the title of this paper does not include an OR joining the two questions. It is simply not a choice between one extreme or another, but a much more complicated and rich process or dialectic of combining and joining old and new into a modified theoretical construct. As Terry Cook so eloquently writes: “Archival history is instead a rich collage of overlapping layers, of contradictory ideas existing simultaneously or even blended together, of thinkers exhibiting differences of emphasis more than of fundamental ideas, of individual thinkers changing their ideas in light of new circumstances, of old ideas appearing in new guises in new places. The pendulum of thought swings back and forth, as one generation solves its predecessor’s problems, but thereby creates new problems for the next generation to address, with ideas having their day, being discarded, and then being revitalized in modified form in later work. And so it should be.”<sup>4</sup>

Before we begin the analysis of the specific archival issues, let us first review two basic models for managing electronic records.

## **MODELS FOR MANAGING ELECTRONIC RECORDS**

### **Life Cycle Model**

The life cycle model for managing records, as articulated by Theodore Schellenberg and others, has been the prominent model for North American archivists and records managers since at least the 1960s. However, the question being asked recently is: does the model provide a viable strategy for managing electronic records? Before we examine archivists' responses to this question, let us briefly review the basic characteristics of the life cycle model. This model portrays the life of a record as going through various stages or periods, much like a living organism. In stage one, the record is created, presumably for a legitimate reason and according to certain standards. In the second stage, the record goes through an active period when it has maximum primary value and is used or referred to frequently by the creating office and others involved in decision making. During this time the record is stored on-site in the active or current files of the creating office. At the end of stage two the record may be reviewed and determined to have no further value, at which point it is destroyed, or the record can enter stage three, where it is relegated to a semi-active status, which means it still has value, but is not needed for day-to-day decision making. Because the record need not be consulted regularly, it is often stored in a off-site storage center. At the end of stage three, another review occurs, at which point a determination is made to destroy or send the record to stage four, which is reserved for inactive records with long-term, indefinite, archival value. This small percentage of records (normally estimated at approximately five per cent of the total documentation) is sent to an archival repository, where specific activities are undertaken to preserve and describe the records.

The life cycle model not only describes what will happen to a record, it also defines who will manage the record during each stage. During the creation and active periods, the record creators have primary responsibility for managing the record, although records managers may well be involved to various degrees. In the semi-active stage, it is the records manager who takes center stage and assumes major responsibility for managing the records.

Finally, in the inactive stage, the archivist takes the lead in preserving, describing, and providing access to the archival record. <sup>5</sup>

To summarize, the life cycle model has contributed, particularly in North America, to the creation of a fairly strict demarcation of responsibilities between the archives and records management professions. Among archivists it has resulted in a tendency to view the life of a record in terms of pre-archival and, archival and active and inactive, and to regard the stage when the archivist intervenes in the cycle as occurring sometime towards the end of the life cycle when the record becomes inactive and archival.

The chief supporters of the life cycle model as it pertains to electronic records have come from the electronic records research project team at the Master of Archival Science Program at the University of British Columbia. <sup>6</sup> As was revealed in the opening quote from team leaders, testing traditional concepts, including the life cycle model, was a primary goal of the project, and as the quote makes clear, these concepts, including the life cycle model, passed the test. It should be noted that the traditional concepts evaluated by Duranti and MacNeil are largely those expounded by Sir Hilary Jenkinson. Therefore, the UBC's assessment of the life cycle concept, as well as of other archival functions, must be viewed in the larger context of Jenkinson's theories on archival management and the role of the archivist. In Jenkinson's theoretical framework, archival records are characterized by "two common features of extraordinary value and importance": Impartiality - the principle that records are inherently truthful and are "free from the suspicion of prejudice" - and Authenticity - the principle that archives "were preserved in official custody...and free from the suspicion of having been tampered with." <sup>7</sup> According to Jenkinson, the "supreme and most difficult task" of the archivist is "to hand on the documents as nearly as possible in the state in which he received them, without adding or taking away, physically or morally, anything: to preserve unviolated, without the possibility of a suspicion, every element in them, every quality they possessed when they came to him." <sup>8</sup> In short, according to Jenkinson the primary duty of the archivist is to retain the impartial and authentic qualities of the records entrusted to his/her care. Considering the UBC-MAS team's support of Jenkinsonian theory, it is no surprise then that Duranti and MacNeil write that what makes the life cycle model and its division of responsibilities so valuable is that it "ensures the authenticity of inactive records and makes them the impartial sources that society needs." <sup>9</sup> According to UBC

personnel, the intellectual methods required to guarantee the integrity of active records are very much different than those required for inactive records. Hence, it is argued, there must exist a two-phase life cycle approach to the management of records, the creating body “with primary responsibility for their reliability and authenticity while they are needed for business purposes, and the preserving body with responsibility for their authenticity over the long term.”<sup>10</sup>

## **Records Continuum Model**

Criticisms of the life cycle model as means of managing records have surfaced at times in the past, but it has been the emergence of electronic records that has initiated a very spirited debate. This dialogue has resulted in not only a critique of the model but in the definition of an alternate model or framework. This alternate model has come to be most commonly referred to as the “Records Continuum Model.” What is this continuum model, why did it emerge, and how does it differ from the life cycle model? Discussions of strategies for better integrating the activities of archivists and records managers date back at least several decades.<sup>11</sup> However, it was not until the 1990s that a more formally constructed model emerged for viewing records management as a continuous process from the moment of creation, in which archivists and records managers are actively involved at all points in the continuum. The primary motivation in formulating and supporting this model was a concern that lacking a strategy for active and early intervention by the archivist in the records management process, electronic records documenting vital transactions may never be created, may never be fully documented, or may never survive.<sup>12</sup> Perhaps the most basic difference between the continuum model and the life cycle approach is that while the life cycle model proposes a strict separation of records management responsibilities, the continuum model is based upon an integration of the responsibilities and accountabilities associated with the management of records. The new Australian records management standard, which has adopted the continuum model, defines the integrated nature of the record continuum in the following terms: the record continuum is “the whole extent of a record’s existence.” It “refers to a consistent and coherent regime of management processes from the time of creation of records (and before creation, in the design of recordkeeping systems) through to the preservation and use of records as archives.”<sup>13</sup> A noted Australian archivist describes the differences between the life cycle and continuum models in the following manner: “The life cycle

relates to records and information...records have a life cycle...The continuum is not about records. It is about a regime for recordkeeping, The continuum is a model of management that relates to the recordkeeping regime,” which is “continuous, dynamic and ongoing without any distinct breaks or phases.”<sup>14</sup>

A direct result of viewing records management as a continuum is to undercut and destroy the distinction between active and inactive, and archival and non-archival records, and to blur or wipe out the defined set of responsibilities associated with managing records at each stage. One of the consequences of this viewpoint is to propel archivists and archival functions forward in the records management process. In other words, according to the continuum model, strategies and methodologies for appraising, describing, and preserving records are implemented early in the records management process, preferably at the design stage, and not at the end of the life cycle.<sup>15</sup>

Let us now review how these two models actually work when applied to real archival activities, beginning with custody issues.

## **CUSTODY OF ELECTRONIC RECORDS**

Where are electronic records to be housed, and who will service them? Based on one’s perspective, there are two very different answers to these questions. Let us first look at how an archivist employing the life cycle model and Jenkinsonian principles might solve these problems.

Luciana Duranti and other supporters of the life cycle model would argue that the authenticity over time of inactive records be ensured only when their custody is entrusted to professional archivists. In the words of the UBC project personnel: “The life cycle of the managerial activity directed to the preservation of the integrity of electronic records may be divided into two phases: one aimed at the control of the creation of reliable records and to the maintenance of authentic active and semi-active records, and the other aimed at the preservation of authentic inactive records.” The position of the proponents of this argument can be characterized as a centralized archival custody approach, or “Archives as a Place,” where there must exist an “archival threshold” or “space beyond which no alteration or permutation is possible, and where every written act can be treated as evidence and

memory.”<sup>16</sup> More specifically, Duranti and other proponents of this position identify five reasons inactive records should be transferred to an archival repository and not left in the custody of the record creators.

- 1) Mission - Competencies: It is not part of the mission of the creating agency, nor does its staff possess the necessary skills to safeguard the authenticity of non-current, archival records.
- 2) Ability to Monitor Compliance: There are not enough trained archivists available to monitor or audit records left in full distributed custody with the creator.
- 3) Cost to Monitor Compliance: Costs to manage records in a distributed environment are as yet unknown and untested, but it may likely be more costly to monitor recordkeeping practices than to assume custody of the records.
- 4) Changes in Work Environment: Changes in staffing and in departmental priorities can place records left with creating offices at great risk.
- 5) Vested Interests: Inactive records must be taken from those who have a vested interest in either corrupting or in neglecting the records.<sup>17</sup>

For all these reasons, Duranti and the UBC project staff conclude “that the routine transfer of records to a neutral third party, that is, to a competent archival body...is an essential requirement for ensuring their authenticity over time.”<sup>18</sup>

As opposed to the “Archives as a Place” position, archivists who support the continuum model portray their strategy regarding custody and use as a “Post-Custody” or “Distributed Custody” approach. In this strategy, the transfer of the inactive records to an archives may be delayed or deferred for much longer periods than in the past; in some cases, the records may actually remain indefinitely in the custody of the originating office. The basic premise supporting this position is that in the electronic environment, archival institutions can fulfill their responsibilities without assuming physical custody of the records. To achieve these goals, however, means developing new methodologies and techniques for managing records in a distributed custody environment. Proponents of this strategy identify four arguments to support their position of distributed custody and access.

- 1) Costs: It would be enormously expensive and a massive waste of resources to attempt to duplicate within the archival setting the technological environments already in place within the creating offices.

- 2) Changes in Technology: Rapid technological change and reluctance of manufacturers to support old hardware make it extremely difficult for a centralized repository to manage an institution's electronic records.
- 3) Skills Required: It would be difficult, if not impossible, for an archives staff to learn the skills and provide the expertise needed to access and preserve the wide variety of technologies and formats in use.
- 4) Loss of Records: Insisting on custody will result in some cases in leaving important records outside the recordkeeping boundary.<sup>19</sup>

In the words of a team member of the University of Pittsburgh Electronic Records project, “archivists cannot afford – politically, professionally, economically, or culturally – to acquire records except as a last resort and that they needn't acquire records to achieve all their mandate. Indeed, the evidence indicates that acquisition of records and the maintenance of the archives as a repository, gets in the way of achieving archival objectives and that this dysfunction will increase dramatically with the spread of electronic communications.”<sup>20</sup>

However, in the final estimation, as some archivists have argued, the primary issue may not be custody, but rather ensuring that a viable and widely accepted system for managing electronic records is in place. This means establishing policies and procedures that ensure that no matter where the records are housed they will be managed according to well-established standards. More specifically, a distributed strategy for custody necessitates the creation of legally binding agreements with offices, of reliable means of auditing records, of an extensive network of training programs, and of other mechanisms designed to ensure that custodians of records understand their responsibilities and are living up to those expectations. An Australian archivist sums up this position when he writes: “The real issue is not custody, but the control of records and the archivist's role in this...What archivists should have been talking to their clients about is not custody, but good recordkeeping practices which make it possible for archivists to exercise the necessary control.”<sup>21</sup>

## **APPRAISAL OF ELECTRONIC RECORDS**

The emergence of electronic records, in conjunction with the volume of modern documentation and the changing nature of modern institutions, has

initiated considerable debate on the theory and practice of archival appraisal. Much of this debate and dialogue in North America has initially focused on the merits of the appraisal theory and methodology created at the National Archives in the period from the 1940s to the 1960s, and articulated primarily in the writings of Theodore Schellenberg.<sup>22</sup> One way of reviewing the basic features of this dialogue and of illustrating the differences between appraisal theories is to examine the issues by means of a series of questions: Why are records appraised? What will be appraised? How will they be appraised? And when will they be appraised?

### **WHY are Records Appraised?**

As any archivist knows, traditional appraisal theory in North America focuses on finding value in records, these values commonly expressed as primary and secondary, with secondary values being divided into evidential and informational values. In this methodology, Schellenberg placed special emphasis on the archivist's responsibility for appraising records to identify secondary, research values, as his definition of archives makes clear: "Those records of any public or private institution which are adjudged worthy of permanent preservation for reference and secondary purposes."<sup>23</sup> For many archivists, the search for research value remains at the heart of the appraisal process. Increasingly, however, critics of this appraisal methodology have argued that by defining appraisal primarily in terms of secondary research value based largely on content analysis, the Schellenberg model does not provide a proper answer for why we appraise records. Critics of Schellenberg have put forward three arguments to support this judgment. In the first place, they argue that predicting or anticipating research needs or trends is not a realistic goal, and at best will mean the archivist will remain "nothing more than a weathervane moving by the changing winds of historiography."<sup>24</sup> Secondly, critics assert that content-oriented appraisal cannot give a true or, even, representative image of society.<sup>25</sup> Finally, archivists who support Jenkinson's theory on the nature of archives assert that selection by content to support research is in direct conflict with basic archival theory and the very nature of archives.<sup>26</sup>

So, what have archivists offered in its place? Although appraisal theories and methodologies abound, almost all major commentators agree that a principal objective or aim of archival appraisal must be the preservation of evidence<sup>27</sup> documenting the functions, processes, activities, and transactions<sup>28</sup>

undertaken and completed by the institution or individual. It is important to recognize that evidence in this context refers, in the terms of Hilary Jenkinson, to those impartial, authentic, and interrelated records which are created “naturally” in the process of conducting business or undertaking activities. It does not refer to information that is gathered, largely by examining the content of records, for the purpose of answering questions about the history, mission, and activities of the subject under review. In short, evidence is the actual record made or received in the course of undertaking and completing the activity; it is not the pieces of information or bits of data selected to document the event.<sup>29</sup> It is the preservation of this direct evidence of actions, decisions, and processes that has emerged as one of the primary concerns of most of the major appraisal strategies and models of the last twenty years. In the words of two prominent commentators on appraisal: “Archivists are Servants of Evidence,”<sup>30</sup> and “Evidence is an aim...of archival appraisal.”<sup>31</sup>

Beyond ensuring the preservation of evidence, do archivists have additional duties as an interpreter and a documenter of society? It is in response to this question that disagreements about the objectives of archival appraisal have occurred. At one end of the spectrum, that represented originally by Hilary Jenkinson and in the modern era by Luciana Duranti and reflected in the theoretical framework and methodology of the UBC electronic records project, is the belief that evidence itself is the aim of appraisal. In other words, the archivist’s goal is not to interpret this evidence, attribute external values to the records or to the creators or functions generating the records, or create a representative image of society. Rather, in this view, the goal is to retain intact “the internal functionality of the documents, and the documents aggregations, with respect to one another, so that compact, meaningful, economical and impartial societal experience can be preserved for the next generations.”<sup>32</sup> In other words, the archivist’s primary contributions are to preserve authentic and impartial records and by so doing provide researchers with the evidence that will permit them to interpret events in their own way. Consequently, within this theoretical framework the role of the archivist in the appraisal process is very limited – archivists are not judges or interpreters; they are custodians and preservers.

On the other end of the spectrum are those archivists who support an appraisal model that advocates a more active role for the archivist in shaping the documentary record. Two prominent strategies in this category are

those that locate value 1) in the provenance of the records and 2) in the assessment of use of the records. Supporters of the provenance based appraisal model argue that the essence of appraisal is the “articulation of the most important societal structures, functions, record creators, and records creating processes, and their interaction, which together form a comprehensive reflection of human experience.”<sup>33</sup> Terry Cook has labeled this strategy “macro-appraisal,” which he defines as an approach “that focuses research instead on records creators rather than directly on society, on the assumption that those creators, and those citizens and organizations with whom they interact, indirectly represent the collective functioning of society.”<sup>34</sup> It is an appraisal methodology, Cook writes, that is built on “a context-based, provenance-centred framework rather than in a content-based, historical-documentalist one.”<sup>35</sup> The other appraisal model which advocates a more active role for archivists identifies “the means of documenting the precise form and substance of past interactions between and among people in society” in the “analysis of the use to which they [records] are put by the society that created them, all along the continuum of their existence.”<sup>36</sup> In other words, in this model appraisal decisions mirror or reflect the values a wide variety of users assigned to the records, resulting in the selection of archival records which are most cherished or frequently consulted by the society which created and used the records.<sup>37</sup>

To summarize, recently there has been no shortage of writings on the proper role of appraisal in archival theory and methodology. However as yet, no one theory has been embraced by the profession or taken root and flourished to the degree that Schellenberg’s methodology has in the United States. This is not to say, however, that some significant rethinking of the way archivists appraise records has not occurred. Certainly, one of the most significant and widespread changes has been the growing recognition that the first and primary goal of appraisal must be the preservation and accessibility of the evidence of the functions and activities of the subjects documented by archivists. This recognition has caused the archival profession to begin reassessing what is appraised, and how and when the process occurs, particularly in an automated environment.

### **WHAT will be appraised?**

Schellenberg’s methodology employs a content oriented, “pertinence”<sup>38</sup> approach to determining value. It is a strategy that focuses largely on record

content and on the structure of the organization to determine evidential and information values. Critics of the Schellenberg appraisal methodology argue these are not the best or right sources upon which to construct an appraisal model. For those archivists, like Luciana Duranti, who advocate that maintaining accurate and authentic evidence is the primary role of the archivist, the question of what to appraise is primarily addressed by means of “carefully defining archival jurisdictions and acquisitions policies and plans” and “not by attributing externally imposed values.”<sup>39</sup> Archivists who advocate a functional appraisal model, like Terry Cook and Helen Samuels, point to three basic reasons to support the argument that content and structure are not the best sources for determining value. In the first place, they argue that in an business environment characterized by a flattening of the organizational structure and a more decentralized approach, structure and setting will have much less relevance in understanding the nature and significance of records than they did in the more traditional, hierarchical business environment. Ultimately, they argue, it is business functions and not organizational structure that will define provenance and will guide appraisal decisions. Secondly, in the modern world of high volume documentation and of electronic records that exist as logical and not physical entities, archivists can no longer hope to focus on the record and appraisal by content. Finally, they assert that in the search for evidence, the most accurate and complete documentation will be provided by examining the function, activity, and transaction that generated the record, rather than the record itself. In short, supporters of functional appraisal argue that the context and not the content of the record must be the starting point in the search for evidence.<sup>40</sup> For supporters of an appraisal theory based on patterns of use, “the appraiser must be especially attentive to demonstrations of contemporary usefulness...All past and present uses of archives provide the ‘data’ on the basis of which the appraiser attempts to induce a sense of future usefulness on behalf of society. Research use of archives is one, but only one, of the uses to be assessed.”<sup>41</sup>

### **HOW will records be appraised to uncover this evidence?**

Naturally, by changing the focus of the appraisal, many critics of Schellenberg’s methodology also advocate a new definition of how the appraisal process should be undertaken. The traditional model, critics assert, employs a “bottom-up” approach to appraisal, that is, value is established by moving upwards from analysis of the record, to the examination of the

transactions and activities, and finally to identification of the functions and administrative structure. This appraisal process, critics contend, is a flawed and essentially backwards approach. Supporters of a new model maintain that a more rational and productive appraisal process would employ a “top-down” approach. For proponents of this functional appraisal model, the process begins with an analysis of business functions and structure or of the archival fonds,<sup>42</sup> of the interaction between function and structure, then moves downward to an analysis of the activities and transactional processes, and finally arrives at an examination of the record, if necessary. During this process two appraisal assessments would be made: one, of the most important record creating entities and the other, of the critical functions and transactions. These units and these functions then become the targets of record collecting activities by the archives.<sup>43</sup>

### **WHEN will records be appraised?**

Finally, some critics of appraisal theory and practice based on Schellenberg’s principles call for a reassessment of when archival appraisal occurs. In accordance with the tenets of the continuum model, proponents of a new appraisal model advocate conducting the appraisal much earlier in the process, again preferably at the design stage. Advocates of this position warn that if procedures for early identification and maintenance are not established, records, particularly electronic records, may never survive or even be created.<sup>44</sup> However, advocates of Jenkinsonian principles and of the life cycle model argue that archival intervention on the scale advocated by the proponents of the continuum theory may have adverse effects on the integrity of records. This is not to say that Duranti and others who support this position do not believe archivists have a role in the early stages of the life cycle. However, ultimately this role is limited, and it certainly does not envision archivists actively appraising records.<sup>45</sup>

To summarize, many appraisal theories generated in the last ten to fifteen year differ from the traditional appraisal model based on Schellenberg’s principles. Overall, there is general agreement that in the modern world of high volume documentation and electronic records, archivists must focus on the concept of preserving evidence of functions and activities. Beyond that role, some archivists advocate an appraisal strategy designed to identify and rank the functions and creators that generated the records. Others seek to locate the value of records in patterns of use. In addition some archivists

who support the continuum model argue that archivists must intervene early in the records management process if records are to be created and preserved. Others, who support a life cycle model and Jenkinsonian principles, warn that involvement early in the life cycle of records may have very harmful effects on the integrity of the record.

## **DESCRIPTION OF ELECTRONIC RECORDS**

Will traditional methods for describing archival records (descriptive inventories, guides, and other finding aids created after the records are transferred to the archives) be adequate and useful for electronic records? Again, there are two quite different responses to this question based on one's perspective. This time let us first examine the arguments of those archivists who support the continuum model and argue for alternate strategies for describing electronic records.

Critics of employing traditional strategies for describing electronic records identify four major reasons for adopting other methods. In the first place, they argue that documentation of business processes cannot be postponed until the point when records become inactive: to be effective, description must take place over the life of the record. Only in this way, it is argued, can archivists hope to document business transactions throughout their life cycle. So in this context we again encounter a basic premise of the continuum model: the archivist must be involved much earlier in the management process, preferably at the design stage.

Secondly, it is argued that traditional prose narratives and descriptions of data structures cannot possibly describe the multitude of record linkages or reflect the relationships between and among transactions in automated systems. To properly describe these complex record systems, it is recommended that much more dynamic and interactive documentation strategies be employed.

In a related argument, critics claim that traditional descriptive methodologies that depend upon physically reviewing records, files, and series to identify content and context are not viable in the world of electronic records. Unlike paper documents where content and physical form are united in a medium that provides the record of the transaction, and where relationships among documents can be observed, electronic records are not physical but are

logically constructed and often “virtual” entities. Therefore, it is argued, efforts to document business transactions based on an examination of “views” or of automated forms will fail to reveal the nature of the business transactions. Consequently, methods other than direct observation and review must be employed to properly document automated systems.

Finally, proponents of this position of change argue that a viable system of documenting business processes already exists in the form of record system metadata. It is routine for systems designers and programmers to generate documentation on the content and structure of the systems and programs they create. Why not, it is suggested, make this metadata system the basis for

describing electronic records? Why not consider a shift from creating descriptive information to capturing, managing, and adding value to system metadata? As the reference to adding value suggests, proponents of this strategy do not recommend adopting metadata systems as is. System metadata typically do not contain all the information archivists need to describe electronic records; in particular, all the necessary contextual data required to understand the context of the transaction are not present. Therefore it is suggested that archivists will need to know which metadata elements are required to fully describe these records and must be in position to add these descriptive elements to the system, preferably at the design stage.<sup>46</sup>

To summarize, critics of employing traditional methodologies to describe electronic records argue that methods based on direct observation and review will not work, and that the finding aids produced will not adequately describe these complex systems. As an alternative strategy they recommend a shift to the management of system metadata, but they caution that this strategy will work only if archivists define and articulate the required metadata elements and are involved near or at the beginning of the design process.

Naturally, not all archivists agree with the strategy described above. In particular, members of the UBC-MAS project team have expressed serious misgivings. Their arguments focus on the themes of the authenticating role and the unique and vital contributions of traditional archival description. Luciana Duranti argues that the “verification of the authenticity of electronic records over the long term will have to rely on one thing and one thing only: their *archival description*.”<sup>47</sup> Traditional arrangement and description verify

authenticity, according to Duranti, by preserving the network of administrative and documentary relationships. “Administrative relationships are revealed and preserved through the writing of the administrative history of the archival fonds and its parts, including the preservation and custodial history. Documentary relationships are revealed and preserved through the identification of the levels of arrangement of the fonds and their representation in structured descriptions.”<sup>48</sup>

Heather MacNeil, another member of the UBC-MAS team, focuses on the concepts of authenticity and impartiality from another perspective. She warns that by introducing metadata requirements designed to satisfy the needs of future users, archivists compromise the impartiality of the records. And if “the impartiality of the metadata is compromised, their value as evidence will be compromised, which means, ultimately, that the underlying objective of metadata strategies—the preservation of evidence—will be defeated.”<sup>49</sup> In short, she asserts, “archival participation in the design and maintenance of metadata systems must be driven by the need to preserve them as archival documents, that is, as evidence of actions and transactions, not as descriptive tools.”<sup>50</sup>

Another argument MacNeil puts forward in defense of traditional archival description is that it performs a vital function that system metadata cannot. She argues that because the scope and context of system metadata are “comparatively narrow, metadata circumscribe and atomize these various contexts. Archival description, on the other hand, enlarges and integrates them. In so doing it reveals continuities and discontinuities in the matrix of function, structure, and record-keeping *over time*.”<sup>51</sup>

To summarize, the UBC-MAS position on the issue of description of electronic records asserts that because of the unique and vital role of archival description in maintaining authenticity and in describing the context of records over time, metadata systems cannot replace traditional archival description. The answers, they claim, will be found by following “the dictates of archival science” and by building strategies “on the foundation of descriptive principles and practices that have already been established.”<sup>52</sup>

## **CONCLUDING REMARKS**

Let us return to the questions posed at the beginning of this paper: What is the practicing archivist to make of these quite different, often conflicting strategies? Where does one start in the quest to become an informed player in electronic records management?

First and foremost, do not become a true believer and irrevocably commit at this point to any one model for managing electronic records. The problem with the Pitt or UBC models or any other strategy is that they have not been properly tested in the field.<sup>53</sup> As Margaret Hedstrom reminds us, “What we lack is an evaluation of the usefulness of these findings from the perspective of organizations that are responsible in some way for preserving and providing access to electronic records. We need assessments from the administrators of archival and records management programs about the feasibility of putting the proposed policies and models into practice.”<sup>54</sup> In short, there are no clear-cut answers available yet, but there are plenty of very good ideas and emerging strategies out there. The existence of electronic records strategies leads to the next suggestion.

Get started immediately in exploring the issues and various options. Do not sit back and wait for some ready-made product to present itself, because it is very unlikely such a product will appear. Any model or strategy will require a great deal of knowledge, judgment, and good common sense from those who are asked to implement it. Moreover, you may be faced with the task of determining which strategy or combination of strategies best suits you and your institution, and this decision requires you to be informed and knowledgeable.

A related piece of advice would be to begin learning some new skills. One of the conclusions arrived at by most archivists involved in electronic records management is that the archival profession needs to add some new skills to its “tool kit” in order to be effective in this world of automated records. Skills that immediately come to mind are a basic knowledge of how automated systems are created and work; a more detailed knowledge of data and information management principles and techniques; experience implementing functional decomposition and business process modeling methodologies; and knowledge of computer based information systems, particularly metadata systems, such as data dictionaries and information resource dictionary systems. The goal here is not to become a programmer or systems analyst, but rather an archivist who can speak the language of the

technologist, who understands the role of metadata in documenting systems, and who can perform some basic and fundamental tasks related to the modeling and description of business processes.

Begin identifying the key players at your institution in the area of data and information management. Who are the people who manage the central databases in your institution? Who is involved in decision support? Is there a group of individuals who meet regularly to discuss data and information management issues? Who is involved in risk assessment and management? Who are the individuals auditing the institution's information systems? Once you have identified these people, begin the process of forming partnerships. Data and information managers, auditors, and decision support personnel often do not know how the archivist fits into the whole process of managing electronic records. It is important for archivists to educate these people about the archival mission, to learn more about technologists' particular needs and methodologies, and eventually begin to develop with them an overall strategy for managing electronic records. Designing a program for managing electronic records requires the skills and expertise of many people; it demands a real team effort.

Finally, it is important to remain flexible and open to new ways of doing things. Most archivists working with electronic records agree that managing this material will require some changes in the way we do business. Whether this results in a new archival paradigm or merely in some adjustments to traditional practices is not known. Most likely, however, those archivists who are willing to explore and consider new ideas, new techniques, and new methodologies will be ahead of the game. Dogmatism and a rigid allegiance to strongly held notions of the past on how to manage records seem counterproductive in the present environment characterized by rapid changes in many aspects of our professional life. What is needed at this point in time are archivists who are willing to experiment with creative combinations of ideas, old and new; who are courageous enough to seek out and form partnerships with information specialists, auditors, and risk managers whose language and methodologies are presently foreign to them; who are motivated to learn new skills; and ultimately, who are committed to developing realistic strategies for managing electronic records, no matter where this journey may lead them.

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<sup>1</sup> Terry Cook, "Building An Archives: Appraisal Theory for Architectural Records," *The American Archivist*, Vol. 59, No. 2 (Spring 1996): 141.

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<sup>2</sup> Luciana Duranti and Heather MacNeil, "The Protection of the Integrity of Electronic Records: An Overview of the UBC-MAS Research Project," *Archivaria*, Vol. 42 (Fall 1996): 64.

<sup>3</sup> For extended discussions of this concept of a new archival paradigm see Terry Cook, "Electronic Records, Paper Minds, The Revolution in Information Management and Archives in the Post-Custodial and Post-Modernist Era," *Archives and Manuscripts*, Vol. 22, No. 2 (November 1994):300-328; Terry Cook, "What is Past is Prologue: A History of Archival Ideas Since 1898, and the Future Paradigm Shift," *Archivaria* 43 (Spring 1997): 17-63; Greg O'Shea and David Roberts, "Living in a Digital World: Reorganizing the Electronic and Post-Custodial Realities," *Archives and Manuscripts*, Vol. 24, No. 2 (November 1996): 286-311; and Frank Upward and Sue McKemmish, "Somewhere Beyond Custody," *Archives and Manuscripts*, Vol. 22, No. 1 (May 1994): 136-149

<sup>4</sup> Terry Cook, "What is Past is Prologue: A History of Archival Ideas Since 1898, and the Future Paradigm Shift," p. 47.

<sup>5</sup> For a summary of the Life Cycle concept see Ira A. Penn, Gail Pennix and Jim Coulson, *Records Management Handbook* (Hampshire, England: Gower Publishing Limited, 2<sup>nd</sup> Edition, 1994), pp. 12-17.

<sup>6</sup> For overview descriptions of the UBC-MAS Project see Duranti and MacNeil, "The Protection of the Integrity of Electronic Records," pp. 46-67; and the Project Home Page at <http://www.slais.ubc.ca/users/duranti>.

<sup>7</sup> Hilary Jenkinson, *A Manual of Archive Administration* (London: Percy Lund, Humphries & Co. LTD, 1965), pp. 12-13

<sup>8</sup> Hilary Jenkinson, "Reflections of an Archivist," in *A Modern Archives Reader* (Washington, D.C.: National Archives and Records Service, 1984), p. 20. For a more extensive discussion of the archivist's primary duties according to Jenkinson, see his description of the "moral defence of archives" in *A Manual of Archive Administration*, pp. 83-123.

<sup>9</sup> Duranti and MacNeil, "The Protection of the Integrity of Electronic Records," p. 62.

<sup>10</sup> *Ibid.*, p. 60. For an extensive discussion of the concepts of reliability and authenticity, see Duranti's article "Reliability and Authenticity: The Concepts and Their Implications," *Archivaria* 39 (Spring 1995): 5-10.

<sup>11</sup> For discussions of a records continuum that pre-date the archival dialogue on electronic records see Frank Upward, "In Search of the Continuum: Ian Maclean's 'Australian Experience' Essays on Recordkeeping" in *The Records Continuum. Ian Maclean and Australian Archives First Fifty Years*, Sue McKemmish and Micheal Piggott, eds (Clayton, Victoria: Ancora Press, 1994): 110-130; and Jay Atherton, "From Life Cycle to Continuum: Some Thoughts on the Records Management-Archives Relationship," *Archivaria*, Vol. 21 (Winter 1985-1986): 43-51.

<sup>12</sup> The primary proponents of the continuum model have been archivists in the Australian archival community. The research project that most embodies the premises of the continuum model is the University of Pittsburgh Functional Requirements project. For descriptions of the records continuum model see Frank Upward, "Structuring the Records Continuum. Part One, Post-custodial Principles and Properties," *Archives and Manuscripts*, Vol. 24, No. 2 (November 1996): 268-285; O'Shea and Roberts, "Living in a Digital World," pp. 286-311; Adrian Cunningham, "Journey to the End of the Night: Custody and the Dawning of a New Era on the Archival Threshold - A Commentary," *Archives and Manuscripts*, Vol. 24, No. 2 (November 1996): 312-321; and David Bearman, "Item Level Control and Electronic Recordkeeping," *Archives and Museum Informatics. Cultural Heritage Informatics Quarterly*, Vol. 10, No. 3 (1996): 242-245.

<sup>13</sup> AS 4390.1-1996F: General, Clause 4.6

<sup>14</sup> Ann Pederson in an e-mail message to the Australian Archivists listserv, 17 February 1999.

<sup>15</sup> Another model or framework for conceptualizing electronic records management has come to be known as the "Steering Rather Than Rowing Approach" to managing archives. The main features of this strategy are a greater emphasis on archival monitoring and oversight activities, on empowering others to solve their record problems, and finally, on developing a decentralized or distributed approach to archival management. It is a strategy which has much in common with the Records Continuum Model. The "Steering Rather Than Rowing" strategy for archives was introduced by David Bearman and Margaret Hedstrom in "Reinventing Archives for Electronic Records: Alternate Service Delivery Options," in *Electronic Records Management Program Strategies*, edited by Margaret Hedstrom, Archives and Informatics Technical Report, No. 18 (Pittsburgh, PA: Archives and Museum Informatics, 1993): 82-98.

<sup>16</sup> Luciana Duranti, "Archives as a Place," *Archives and Manuscripts*, 24, No. 2 (November 1996): 252.

<sup>17</sup> For articulation of these arguments see Duranti and MacNeil, "The Protection of the Integrity of Records," pp. 46-67; Duranti, "Archives as a Place," pp. 242-256; Terry Eastwood, "Should Creating Agencies Keep Electronic Records Indefinitely?," *Archives and Manuscripts*, Vol. 24, No. 2 (November 1996): 268-285; Ken Thibodeau, "To Be Or Not To Be: Archive Methods for Electronic Records" in *Archival Management of Electronic Records*, ed. by David Bearman, Archives and Museum Informatic Technical Report, No. 13 (Pittsburgh, PA: Archives and Museum

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Informatics, 1991): 1-13; and Edward Higgs, "Information Superhighways or Quiet Country Lanes: Accessing Electronic Archives in the United Kingdom," in Playing for Keeps: the Proceedings of an Electronic Records Management Conference Hosted by the Australian Archives, Canberra, Australia, 8-10 November 1994, On-line Version, located at [http://www.aa.gov.au/AA\\_WWW/AA\\_Publications/P4K/Higgs.htm](http://www.aa.gov.au/AA_WWW/AA_Publications/P4K/Higgs.htm).

<sup>18</sup> Luciana Duranti and Heather MacNeil, "The Protection of the Integrity of Electronic Records," p. 60.

<sup>19</sup> For descriptions of the "Distributed Custody" approach and articulation of arguments for implementing this strategy see David Bearman, "An Indefensible Bastion: Archives Repositories in the Electronic Age," in Archival Management of Electronic Records, ed. by David Bearman, Archives and Museum Informatics Technical Report, No. 13 (Pittsburgh, PA: Archives and Museum Informatics, 1991): 14-24; O'Shea and Roberts, "Living in a Digital World," pp. 286-311; Upward, "Structuring the Records Continuum. Part One, Post-custodial Principles and Properties," 268-285; Cunningham, "Journey to the End of Night," pp.312-321; Charles Dollar, The Impact of Information Technologies on Archival Principles and Methods (Macerata, Italy: University of Macerata, 1992): pp. 53-55, 75; Hans Hofman, "Off the Beaten Track: the Archivist Exploring the Outback of Electronic Records," in Playing for Keeps: the Proceedings of an Electronic Records Management Conference Hosted by the Australian Archives, Canberra, Australia, 8-10 November 1994, On-line Version, located at [http://www.aa.gov.au/AA\\_WWW/AA\\_Publications/P4K/Hofman.htm](http://www.aa.gov.au/AA_WWW/AA_Publications/P4K/Hofman.htm); and statements on electronic records management on the Australian Archives Home Page at [http://www.aa.gov.au/AA\\_WWW/AA\\_Issues.html](http://www.aa.gov.au/AA_WWW/AA_Issues.html).

<sup>20</sup> David Bearman, "An Indefensible Bastion: Archives Repositories in the Electronic Age," in Archival Management of Electronic Records, p. 14.

<sup>21</sup> Adrian Cunningham, "Ensuring Essential Evidence," paper for the National Library of Australia News, November 1996, On-line version located at <http://www.nla.gov.au/nla/staffpaper/acunning5.html>.

<sup>22</sup> For a detailed discussion of Schellenberg's appraisal methodology, see T.R. Schellenberg, Modern Archives. Principles and Techniques (Chicago: University of Chicago Press, Midway reprint, 1975), pp. 133-160.

<sup>23</sup> T.R. Schellenberg, Modern Archives, p. 16.

<sup>24</sup> F. Gerald Ham, "The Archival Edge," The American Archivist, Vol. 38, No. 1 (January 1975): 8.

<sup>25</sup> Angelika Menne-Haritz, "Appraisal or Documentation: Can we Appraise Archives by Selecting Content?" American Archivist 57, No. 3 (Summer 1994): 528-542.

<sup>26</sup> Luciana Duranti, "The Concept of Appraisal and Appraisal Theory," American Archivist 57, No. 2 (Spring 1994): 328-344.

<sup>27</sup> Perhaps the most widely quoted definition of evidence is provided by David Bearman. For a good discussion of evidence, see David Bearman, "Archival Principles and the Electronic Office," in Electronic Evidence. Strategies for Managing Records in Contemporary Organizations (Pittsburgh, PA: Archives and Museum Informatics, 1994), pp. 147-149.

<sup>28</sup> Slowly, the archival profession is working towards providing more precise definitions of these concepts. In particular, see the working definitions of functions and transactions created for the Indiana University Electronic Records project described in "The Indiana University Electronic Records Management Project Revisited," American Archivist, Vol. 62 (Spring 1998): 153-156. See also Chris Hurley, "What, If Anything, Is a Function," Archives and Manuscripts 21, no. 2 (1993): 208-220.

<sup>29</sup> For a description of Jenkinson's concept of records and evidence, see Luciana Duranti, "The Concept of Appraisal and Archival Theory," pp. 334-337. There is some disagreement as to whether Schellenberg's concept of evidential is or is not roughly equivalent to Jenkinson's concept of evidence. Terry Cook and Timothy Ericson argue that the two concepts are quite different. Cook writes: "Schellenberg explicitly denied that his 'evidential value' was linked to Jenkinson's sense of archives as 'evidence.'" Terry Cook, "What is Past is Prologue," p. 27. Tim Ericson writes: "The fact that Schellenberg and others chose the word 'value' is unfortunate, because they were really talking about evidential and informational content." Timothy Ericson, "'At the Rim of Creative Dissatisfaction': Archivists and Acquisition Development," Archivaria 33 (Winter 1991-92): 67. On the other hand, Angelika Menne-Haritz claims that Schellenberg's concept of evidential has been misunderstood to mean a content-based search for evidence. In fact, she claims Schellenberg's concept of evidential was based on preserving evidence in the Jenkinsonian sense: Schellenberg's "distinction between primary and secondary values makes clear that evidence is needed as a basis for an accurate understanding of what happened." Angelika Menne-Haritz, "Appraisal or Documentation," p. 538. My reading of Schellenberg's definition and examples of evidential

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value lead me to support Cook's and Ericson's view that what he had in mind was content analysis and secondary uses to support research on the history, evolution and mission of an institution.

<sup>30</sup> Terry Eastwood, "Toward a Social Theory of Appraisal," in The Archival Imagination: Essays in Honour of Hugh A. Taylor (Ottawa: Association of Canadian Archivists, 1992), p. 74.

<sup>31</sup> Angelika Menne-Haritz, "Appraisal or Documentation," p. 541.

<sup>32</sup> Luciana Duranti, "The Concept of Appraisal and Archival Theory," p. 341.

<sup>33</sup> Terry Cook, "Mind over Matter: Towards a New Theory of Archival Appraisal," in Barbara L. Craig, ed. The Archival Imagination: Essays in Honour of Hugh A. Taylor (Ottawa: Association of Canadian Archivists, 1992): 41.

<sup>34</sup> Terry Cook, "What is Past is Prologue," p. 31.

<sup>35</sup> *Ibid.*, p. 31. For other discussions of the functional appraisal model see Helen Willia Samuels, Varsity Letters. Documenting Modern Colleges and Universities (Metuchen, N.J.: The Society of American Archivists and Scarecrow Press, 1992); Helen Samuels, "Improving Our Disposition: Documentation Strategy," Archivaria 33 (Winter 1991-92): 125-140; Terry Cook, "Electronic Records, Paper Minds," pp. 300-328; Margaret Hedstrom, "Electronic Archives: Integrity and Access in the Network Environment," American Archivist 58, No. 3 (Summer 1995): 312-324; Hans Booms, "Überlieferungsbildung: Keeping Archives as a Social and Political Activity," Archivaria 33 (Winter 1991-92): 25-33; Greg O'Shea, "The Medium is NOT the Message: Appraisal of Electronic Records by the Australian Archives," Archives and Manuscripts, Vol. 22, No. 1 (May 1994): 68-93; David Bearman, "Diplomatics, Weberian Bureaucracy, and the Management of Electronic Records in Europe and America," in David Bearman, Electronic Evidence. Strategies for Managing Records in Contemporary Organizations, pp. 261-266; Charles Dollar, Archival Theory and Information Technologies, pp. 55-60, 76-77; Hans Hofman, "Off the Beaten Track," On-line Version; and the Australian Archives homepage, "Keeping Electronic Records," at [http://www.aa.gov.au/AA\\_WWW/AA\\_Issues/KER/KER4.html/](http://www.aa.gov.au/AA_WWW/AA_Issues/KER/KER4.html/) For applications of the functional model, see Catherine Bailey, "From the Top Down: The Practice of Macro-Appraisal," Archivaria 43 (Spring 1997): 89-128, and Jim Suderman "Appraising Records of the Expenditure Management Function: An Exercise in Functional Analysis," Archivaria 43 (Spring 1997): 129-142.

<sup>36</sup> Terry Eastwood, "Toward a Social Theory of Appraisal," in The Archival Imagination, p. 80, 83.

<sup>37</sup> Use of records as a primary factor in defining archival methodology has been a source of constant debate in the profession. Much of this discussion has focused on the need for more and better public programming and outreach programs, for arrangement and description methodologies that better reflect the way researchers use collections, and for the creation of data that better identifies the needs of users. However, there are some who suggest user needs and usage of records should guide and ultimately determine all decisions regarding archival theory and practice, including appraisal. Eastwood's article is certainly one of the most well-defined, focused articles linking usage and appraisal. A more recent endorsement of use as the primary appraisal criteria can be found in Mark Greene's article "The Surest Proof": A Utilitarian Approach to Appraisal," Archivaria, No. 45 (Spring 1998): 127-169. For other discussions on use, see Elsie T. Freeman, "In the Eye of the Beholder: Archives Administration from the User's Point of View," American Archivist 47 (Spring 1984): 111-123; Lawrence Dowler, "The Role of Use in Defining Archival Practice and Principles: A Research Agenda for the Availability of Use of Records," American Archivist 51 (Winter/Spring 1988): 74-86; Timothy Ericson, "'Preoccupied with our gardens': Outreach and Archivists," Archivaria 31 (Winter 1990-91): 114-122. For articles arguing against the designation of use as the primary factor in the development of archival theory and practice, see Terry Cook, "Viewing the World Upside Down: Reflections on the Theoretical Underpinnings of Archival Public Programming," Archivaria 31 (Winter 1990-91): 123-134; and Barbara Craig, "What are Clients? Who are the Products? The Future of Archival Public Services in Perspective," Archivaria 31 (Winter 1990-91): 135-141.

<sup>38</sup> Terry Eastwood uses this term in his article "Towards a Social Theory of Appraisal," pp. 81-82.

<sup>39</sup> Luciana Duranti, "The Concept of Appraisal and Archival Theory," p. 343.

<sup>40</sup> Terry Cook, "Mind over Matter," pp. 38-52; Terry Cook, "What is Past is Prologue," pp. 40-49; Helen Samuels, "Improving Our Disposition," pp. 125-139.

<sup>41</sup> Terry Eastwood, "Towards a Social Theory of Appraisal," pp. 83-84.

<sup>42</sup> The nature of the archival fonds has been widely debated. For discussions of the nature of the fonds, see Michel Duchein, "Theoretical Problems and Practical Problems of 'Respect des Fonds' in Archival Science," Archivaria 16 (Summer 1983): 64-82; and Terry Cook, "The Concept of the Archival Fonds in the Post-Custodial Era: Theory, Problems and Solutions," Archivaria 35 (Spring 1993): 24-37.

<sup>43</sup> For discussions of the 'top-down' and 'bottom-up' approaches, see Terry Cook, "What is Past is Prologue," pp. 36-37; and Terry Cook, "Building an Archives," pp. 140-143.

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<sup>44</sup> In particular, see the articles written by the Australian archivists in Archives and Manuscripts listed in footnote number 12.

<sup>45</sup> Duranti and MacNeil, "The Protection of the Integrity of Electronic Records," pp. 60-62.

<sup>46</sup> For discussions of this strategy for documenting electronic records see David A. Wallace, "Managing the Present: Metadata as Archival Description," Archivaria, No. 36 (Spring 1995):11-21; Margaret Hedstrom, "Descriptive Practices for Electronic Records: Deciding What is Essential and Imagining What is Possible," Archivaria, No. 36 (Autumn 1993):53-63; David Bearman, "Item Level Control and Electronic Recordkeeping," pp. 195-245; David Bearman, "Documenting Documentation," Archivaria 34 (Summer 1992) 33-49; Charles Dollar, Archival Theory and Information Technologies, pp. 60-62, 77-78.

<sup>47</sup> Duranti, "The Protection of the Integrity of Electronic Records," p. 57.

<sup>48</sup> *Ibid.*, p. 57.

<sup>49</sup> Heather MacNeil, "Metadata Strategies and Archival Description: Comparing Apples to Oranges," Archivaria, No. 36 (Spring 1995): p. 28.

<sup>50</sup> *Ibid.*, p. 30.

<sup>51</sup> *Ibid.*, p. 25.

<sup>52</sup> *Ibid.*, p. 30.

<sup>53</sup> In the period from 1991 to the present, the National Historical Publications and Records Commission (NHPRC) has funded over thirty projects designed to address the electronic records management agenda, and to begin testing various models. For a list and description of these projects see the NHPRC's web site at: <http://www.nara.gov/nara/nhprc/ergrants.html>.

<sup>54</sup> Margaret Hedstrom, Electronic Records Research and Development. Final Report of the 1996 Ann Arbor Conference (Ann Arbor, MI), p. 37.