

## Review Articles

# UNDERSTANDING ELECTRONIC RECORDKEEPING SYSTEMS: UNDERSTANDING OURSELVES

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*This review article reflects on the Winter Workshop, **Understanding Electronic Information Systems**, presented by David Bearman of Archives and Museum Informatics at Monash University, 21 June to 2 July 1993. It was offered as an elective subject within the MA (Archives and Records) course at Monash University and as a continuing education program, aimed at the top-end of the market. As the first such program ever undertaken by the Graduate Department of Librarianship, Archives and Records at Monash or indeed in Australia in our field, it was experimental and exploratory in nature. As a learning experience, it challenged our understanding of who we are and what we do.<sup>1</sup>*

Although originally entitled *Understanding Electronic Information Systems*, the Workshop went far beyond information systems analysis and design concerns to address the critical issues of how to transform information systems into recordkeeping systems, and to re-invent the profession along the way.

### **The Program's Learning Objectives**

The *learning objectives* of the program were:

1. introducing archivists and records managers to the analysis, documentation, control and administration techniques employed in electronic information system specification, design, acquisition, implementation and operation;
2. providing participants with the experience of systems analysis and design through a hypothetical case study of a records management and archival information system;
3. relating this knowledge to archival and records management requirements for electronic information systems;
4. engaging in strategic planning for electronic records management and archival automation in the participants' own organisations.

### **The Participants and Their Expectations**

The program involved twenty participants, including archivists, records managers, educators and students. Most of the archivists and records managers who attended were sponsored by their institutions or work places. The range, length and nature of their professional experience, involvement in strategic thinking about the profession or archival and records management programs, computing skills and exposure to electronic records management issues were varied. Participants were predominantly from the government sector (from government and university archives and records management programs) with a sprinkling of business archivists/records managers and consultants.

In general the participants also had varied expectations of the program. Some hoped they would find answers to some of the critical electronic records management issues challenging the archives and records management profession(s) or their own programs. Most came to hear David Bearman's views on these issues and to explore them with him in person, as well as to get his perspectives on the current North American scene. Some hoped to tap into his vision, be exposed first-hand to his thinking, and to explore the translation of these into practice. Most wanted to know if the theory *could* be put into practice.

Specifically, the participants hoped that the program would help to address issues that can be broadly categorised as to do with:

- understanding electronic information systems and how to ensure that they capture, store and provide access over time to complete, accurate, reliable and useable records of transactions; and
- understanding ourselves and exploring how we can meet the challenges of electronic recordkeeping by transforming our professional roles, while retaining our identity as records managers and archivists.

In the former category, participants wanted to gain a better understanding of information systems, system architecture, relevant standards and best practice, to understand the jargon and discourse of information technologists, to explore functional requirements and specifications for recordkeeping, and to work out how to implement them. In the latter, they hoped that involvement in the Workshop might help to develop a credo for the profession, a sense of common purpose as roles shift and change, and to explore how to position the profession as well as archives and records management units in the new environment, how our programming structures are changed by new communications and information technology, whether traditional records management principles and practice, and archival science are translatable, and in particular, whether there is a continuing role for records managers. The educators in the group had an additional concern with related curriculum development issues and the exploration of changing educational needs in relation to professional degree qualifications, continuing education programs and in-house programs.

### **The Program**

There were four main threads woven through the two weeks of the program.

*Thread (1)* The program explored the tools and methods used to design, document and manage information systems, including functional analysis and logical modelling, data analysis and physical modelling, system architecture, system configuration, standards, data management principles and their application to the management of electronic recordkeeping systems, and data representation. It also considered the players involved such as systems analysts, systems designers, database administrators, data administrators, configuration managers, systems documentalists/librarians, thus addressing Learning Objective 1.<sup>2</sup>

The tools and methods of systems analysis and design explored during the Workshop date from the 1970s. Although they are becoming increasingly redundant as practical tools in the end-user computing environments of the 1990s, they do provide key theoretical understandings of how systems work logically and physically. There

was not enough time to explore the roles and relationships of the various IT players identified, but it is clearly critical to do so in order to identify who we should be working most closely with, and to understand where they are coming from. A significant cultural difference between IT people generally and archivists/records managers was quickly brought home to participants during these sessions; the former are graphics-oriented, the latter text-oriented, a useful insight when considering the communication problems these two groups often experience.

**Thread (2)** The tools and methods of systems analysis and design were applied to a hypothetical case study, a Records Management and Archival system, addressing Learning Objectives 1 and 2. Practical exercises in functional analysis, logical modelling, data analysis and physical modelling were undertaken in the context of this case study.

The use of a hypothetical Records Management and Archival system for these practical exercises proved problematical, as theoretical differences and debate distracted the group and made it difficult to focus on learning new methods and using new tools. With hindsight it is clear that this part of the program would have worked much better if the case study had been a 'given' and taken from a 'neutral' area, e.g. a personnel or supermarket system.

**Thread (3)** Thirdly the program explored the development of functional requirements and specifications for recordkeeping systems, addressing Learning Objective 3. Participants had the opportunity of considering the functional requirements developed by the University of Pittsburgh research project. This project, funded by the National Historical Publications and Records Commission for 1993-1995, has developed a set of recordkeeping functional requirements that must be met if electronic information systems are to capture, maintain and provide access over time to complete, accurate, reliable and useable records. It also aims to explore policy, system design, implementation and standards compliance tactics for meeting the requirements, and to look at the significance and influence of the variable factors in any given context — the business application, software application, business sector/industry and organisational culture. Participants in the Workshop also worked on an Australian version of the requirements and carried this work forward by beginning to map out a related set of specifications.

The functional requirements for recordkeeping were also considered in the context of the development of a Records Management and Archival System which would support an archival/records management role concerned primarily with defining and regulating an organisation's recordkeeping regime, audit and consultancy activities, and maintaining a knowledge-base about the organisation in terms of

its functions, structures and recordkeeping systems. The traditional model of archival work and its demarcation from records management were regarded as outdated by most group members, and no longer applicable to much of the Australian scene. According to the traditional model archival work occurs at the end of the life cycle of the record. It is custodial, records-centred and task-oriented. Records managers pass the baton to the archivists at the point where records are no longer relevant to current business activity. Thus archivists survey, appraise, dispose of, accession, describe, preserve and provide access to 'dead' records. The group was keen to explore alternative models, ones that might better suit emerging realities or suggest future possibilities. An alternative model, presented by David Bearman during the Workshop, involved the group in exploring a role for records managers and archivists that would involve analysing organisational functions and activities, and defining business transactions and their significance — thereby determining what records should be created and maintained for corporate purposes to do with 'accountability, continuity of operations and competitiveness'<sup>3</sup>. Within this model, records managers and archivists would also define the metadata needed about the records of these transactions to assure their integrity and useability over time to support access for organisational and archival purposes, identify ways of ensuring that recordkeeping systems meet these record creating, maintenance and accessibility requirements, as well as consulting on the establishment of appropriate recordkeeping regimes and monitoring or auditing their performance.<sup>4</sup> In relation to such work universal functional recordkeeping requirements would clearly play a vital part in the definition of both individual recordkeeping regimes and defining the metadata required to provide access to them. Articulation of this model during the Workshop did not extend to the social purposes of maintaining records of continuing value because they document organisational activity of historical significance. While it might be expedient to sell our programs by emphasising their corporate relevance in terms of accountability, continuity and competitiveness, we need to build our broader archival purposes into our models if they are designed to support a recordkeeping profession that has administrative, legal and historical dimensions.

For most of the group this was one of the highlights of the program. Participants from public records programs in Australia already have had experience of front end appraisal using functional approaches and of description or documentation programs using the series system focussing on current government functions, organisations and records and their inter-relationships. They have also had exposure to non-custodial approaches, including those being pioneered at Australian Archives, and many in the group share a commitment to a public

record tradition in which the archival authority has a regulatory role in relation to current recordkeeping, and operates as a standard-setting body and accountability mechanism. They were therefore predisposed to react positively to post-custodial models. Moreover the group found the fundamental insight on which the development of the functional requirements for recordkeeping is predicated — that not all electronic information systems are recordkeeping systems, indeed that many are deliberately designed so as not to capture records — liberating in its potential to transform the way electronic records management has been approached:

This insight and its implications, starting with the need for archivists and records managers to make recordkeeping systems out of electronic information systems where those systems are used for carrying out transactions of business significance [hence the need to develop functional requirements and specifications for recordkeeping systems], is likely to be crucial for determining archival strategies for electronic records management in the next few years.<sup>5</sup>

It was also crucial to Workshop discussions and explorations.

It in turn is informed by a definition of electronic records closely linked to the twin qualities of all records, their transactionality and contextuality:

The identification of what constitutes an electronic record is the most problematic aspect of managing them ... A record is any communication between one person and another, between a person and a store of information available to others, back from the store of information to a person or between two computers programmed to exchange data in the course of business. What is excluded in this definition is any information that remains within the computer/workspace of a single individual, inaccessible to others, for private information or under editing and development. When the information is shared with another person or a machine accessible to others, it becomes a record. The virtue of this definition is the ease with which individuals can understand it and the simplicity of instructing computing and communications systems to capture it.<sup>6</sup>

This is the starting point for David Bearman's definition of an electronic record — the definition of *when* a record occurs with reference to the crossing of a 'business boundary' defined in terms of the point at which communication, sharing of information or access to it occurs in the context of a business transaction. It informs the University of Pittsburgh functional recordkeeping requirement of comprehensiveness — 'records should be created for all business transactions communicated between two people, between a person and a store of information available to others, and between a source of information and a person'.<sup>7</sup> This definition created some unease in the group insofar as it excludes some types of 'personal papers', including diaries. It was felt that the notions of a 'business boundary' and a

'business transaction' and their definition require more attention. Group members also felt that they should be defined in ways that exclude Normal Administrative Practice-type transactions. Therefore in the Australian version of the functional requirements developed by the group, the Pittsburgh approach was modified to include reference to the need to define which transactions should be captured as records. The determination of when a business boundary is crossed depends on the nature of particular business functions and activities, e.g. in some drafting processes using groupware, it would be necessary to define business transactions and determine business boundaries in such a way that all drafts were captured as records, while in others none of the stages in the drafting process would be considered to be significant transactions. Some group members were also keen to explore whether it is possible to extend the notion of business boundaries in ways which would enable 'private information' to be defined as a transactional record when captured by an individual in a recordkeeping system in the context of organisational or social activity, but not necessarily shared with or communicated or accessible to others. Unfortunately there was no time in the program to pursue these issues further.

**Thread (4)** Finally the group attempted some strategic planning for a Records Management and Archives program which would define and regulate an organisation's recordkeeping regime and maintain a knowledge base about it, addressing Learning Objectives 3 and 4. This involved consideration of how to apply a range or mix of tactics — policy, design, implementation, and standards compliance — in order to meet recordkeeping system functional requirements and specifications. It progressed from an environmental scan to consideration of opportunities and barriers, and societal levers, to the development of strategic approaches and an appropriate mix of tactics to implement them, with reference to an organisation's social, business sector, organisational/functional and technical context.

The group also engaged in a 're-inventing archives' brainstorming exercise (for some, another highlight of the program) based on David Osborne and Ted Gaebler's *Reinventing Government* which is to do with re-examining program structures and methodologies, and exploring alternatives (and is said to incorporate the ideas that brought Clinton to the White House).<sup>8</sup> This exercise was a scaled-down version of one conducted at a conference in Alabama in May 1993 on Archives and State Information Policy. With reference to the Osborne-Gaebler list of mechanisms used by governments to achieve their program objectives (how governments can make things happen without doing things — i.e. how to steer, not row), and the outcomes of the Alabama workshop, the group developed some ideas about re-inventing archives in Australia. Reporting on the outcomes of the Alabama workshop, David Bearman and Margaret Hedstrom comment:

We found numerous principles and concepts from *Reinventing Government* especially useful for rethinking archives, whether they are located in the government, university, private, or non-profit sector. David Osborne and Ted Gaebler propose that governments rethink their service delivery options, define areas of strength, shift performance measures from outputs to outcomes, separate direction and oversight from service delivery, ... [and] encourage entrepreneurship and action by others, and they urge experiments with a host of new methods in order to create governments that are more effective, efficient, responsive and equitable. We believe that many of their basic concepts can be applied to rethinking archives.<sup>9</sup>

### *The pattern*

From the interweaving of these four threads, a rich and intricate pattern began to emerge towards the end of the second week of the program as the group explored how understandings of the nature of records, or 'recordness', can be applied to transform information systems into recordkeeping systems, focusing on the translation of the qualities that constitute 'recordness' into functional requirements, the detailed specification of these requirements, and their implementation via a mix of tactics, involving policy, system design, system implementation and the development of and compliance with standards. In this context, data management principles are brought into play in recordkeeping systems to control records, not merely to manage data, i.e. they are applied to capture and preserve records as evidence — linked content, structural and contextual data captured in the context of a significant business transaction at the point when it crosses a pre-determined business boundary.

The interplay of explorations of the functional requirements for recordkeeping systems, consideration of different models of records management and archival information systems, strategic planning for archives and records management programs, and brainstorming on re-inventing archives suggested exciting possibilities for archives and records management work, and participants were stimulated to think about a visionary and radical future in which professional programs had been re-invented. This linked closely to participants' expectations of the Workshop relating to exploring professional identity and changing professional roles. It also forced participants to confront fundamental questions about the nature of records and the work that we do, and the relevance of traditional demarcations between records management and archival work as well as to reconsider what constitute the fundamental continuities in records management and archival theory.

### **Re-inventing Archives and Records Management Work**

One of the most exciting aspects of the Workshop for many participants was that it began to explore ideas and insights that have



the potential to transform our thinking about the future of archives and records management work.

There are a number of activities underway that may carry forward the work of re-inventing our profession, a few of which are described below.

### ***The RMAA's New Technology Committee's Draft Policy on Electronic Records Management***

The RMAA's New Technology Committee is developing a policy document on electronic records management. A related document aims to provide a statement on 'the role of records management in the "networking age"'. In both cases the development process has taken into account the archival exploration of functional requirements for recordkeeping being pioneered at Pittsburgh, and introduced to Australians during the Workshop. Determination of the role of records management within the types of organisational environments new communication and information technologies are establishing is seen as critical to the survival of the profession. Central to the formation, spread and acceptance of this role is:

the notion that there is something identifiable as 'electronic records management', which is related to many information system management issues, but has an element of particularity which distinguishes it from other system management activities.<sup>10</sup>

This element of particularity is linked to an organisation's need to manage records of its significant transactions as authoritative resources, as evidence of its activities, which is critical to its capacity to function and survive. The paper proposes that in managing electronic records, records managers bring to bear classification, forms of record and recordkeeping systems skills that are underpinned by understandings of the nature of records as consisting of 'content information, structured within forms of records, and captured in the context of the business activity of which they are a part'. Thus they are involved in:

the application of standards, the determination of organisational policies, and the design and implementation of systems with particular reference to their functioning as recordkeeping systems rather than their attributes as information systems [which deal not with records, but with 'chunks of information'].<sup>11</sup>

It is important to note that what is being proposed here draws its conceptual framework and theoretical strength from archival science, and that the role being canvassed in essence belongs to the post-custodial archival model.

### ***Standards Australia Committee on Records Management***

Standards Australia has established an Information Technology Committee 'IT/21' to develop a standard on records management. Its

establishment relates in part to concerns about references in the quality assurance standards (the 9000 series) to keeping adequate records in accordance with appropriate (but non-existent!) standards. An essential pre-requisite to the Committee's work is the adoption of an agreed definition of records management. The lack of an agreed definition has inevitably led the Committee to address the crucial issues of defining both records and records management and thus also to be a part of re-inventing records management and archives work. In his discussion paper for the Committee on these issues, David Roberts proposes that the Committee adopt a definition of records management that is based around managing the 'transactional records' of an organisation to achieve economy and efficiency, serving the needs and protecting the interests of the organisation and its clients, and meeting evidential and accountability requirements.

### *Competency Standards for Archivists and Records Managers*

Under the broad framework of the national training agenda, the ACA, ASA and RMAA have joined forces in a project to develop a set of competency standards for those working in the archives and records field(s). At the time of writing, a Steering Group for the project is in the process of formation, its membership being drawn from the ACA, ASA, RMAA, and AIIM (Association for Image and Information Management), as well as union and employer groups. Although it was originally proposed that the archival profession develop its competency standards under the umbrella of the Arts Competency Standards Body, where the librarians (albeit reluctantly), museum curators and other 'heritage'-related areas have sought shelter, the alliance with the records managers has resulted in a reconsideration of such a positioning and the decision to seek affiliation with the Business Management Competency Standards Body.

An early report on the project in the *Australian Society of Archivists Bulletin*, August 1993, refers to the fundamental question that is an essential preliminary to the project 'What does archives and records work involve?' It is interesting to reflect on how the choice of industry affiliation (business management rather than arts) may influence the way that question is addressed. The official description of what an archivist is as per DEET's *Job Guide* for 1993 is very much a product of a traditional model of archival work; the role as defined is a custodial and task-oriented one to do with survey and appraisal, collection and transfer, arrangement and description, provision of access, and advising on records management. In light of some of the more innovative Australian practice, recent Australian writings, and the Melbourne ASA Conference in June 1993, it appears curiously inadequate. Consider David Bearman's 'in retrospect' comments on the ASA Conference:

In retrospect the 250 plus members of the ASA who gathered in Melbourne demonstrated by their numbers and intense concern for accountability mechanisms that archival science is very alive in the antipodes. They recognise much more than their colleagues in North America that archives and records management are inextricably linked, that archives is an administrative rather than historical discipline, and that the electronic age will force archivists into intervening in the creation of records, not just their care.<sup>12</sup>

This commentary was written for a North American audience where there are different mindsets and different constructs of the split between records managers and archivists to be challenged. As my colleague Frank Upward has observed, emphasising the administrative role at the expense of other traditional legal and historical roles, though an antidote to the historical shunt operating in some areas of the existing archival profession here, flattens the records management and archival 'proto-profession' rather than more fully articulating its branches. The Australian discourse might be better served by arguing the case for recordkeeping as a discipline with administrative, legal and historical dimensions. It is therefore timely to consider the implications of re-inventing archives and records work for the existing professions of archivist and records manager. Do we after all 'belong together' in ways which the North Americans have yet to discover?

### **Conclusion**

We are all, collectively, individually and inevitably, part of the much larger undertaking of re-inventing archives and records management work. Consciousness of the need for this gave the Bearman Workshop participants a sense of urgency, which it is all too easy to lose outside in the real world. It is an undertaking which must begin with efforts to define more rigorously the language of our archival and records management discourse, especially concepts associated with a record's qualities of transactionality and contextuality. The work on functional requirements will feed directly into this undertaking, as will other related activities touched on above. At Monash we have a particular and continuing interest in another closely related issue, the development of a 'language of purpose' for archives and records management work that is to do with providing organisational, social and historical accountability through recordkeeping, and with exploring the essentially transactional nature of the genre of documents which is the concern of our 'proto-profession'.

### **WORKSHOP-RELATED READING**

Workshop reading included the Workshop text book on systems analysis and design (see Endnote 2), Bearman's own writings, and three key reports on strategic approaches to electronic records management:

- **NY State Archives and Records Administration**, *Strategic Plan for Managing and Preserving Electronic Records in New York State Government*, New York, 1988, and subsequent *Summary Status Report and Status Report and Evaluation*, 1992
- **UN Advisory Committee for Co-ordination of Information Systems**, *Electronic Records Management Guidelines: A Manual for Policy Development and Implementation*, UN, New York, 1990
- **Charles Dollar**, *Archival Theory and Information Technologies: The Impact of Information Technologies on Archival Principles and Methods*, University of Macerata, Italy, 1992.

David Bearman's recent article, 'Record-Keeping Systems' (published in *Archivaria* no. 36) provided the conceptual framework for the Workshop and the fundamental insight it puts forward, that information systems are not always, or even usually, recordkeeping systems, was a guiding principle.

The three key reports on strategic approaches to electronic records management represent significant stages in the development of archival thinking on this issue. Each of them at the time of their publication was reporting on 'leading edge' developments. It is stunning to realise how rapidly some of the thinking became obsolete, and instructive to consider which of the insights they provided have enduring relevance.

Three recent Australian reports became available immediately before or during the Workshop, namely:

- **Australian Society of Archivists and Australian Council of Archives**, *Managing Electronic Records*, Canberra, 1993 (reviewed by David Bearman in the November 1993 issue of *Archives and Manuscripts*)
- **Information Exchange Steering Committee**, *Management of Electronic Documents in the Australian Public Service*, Canberra, 1993 (reviewed by John McDonald in this issue of *Archives and Manuscripts*)
- **Library and Information Service of Western Australia**, *Electronic Records: An Investigation into Retention, Storage and Transfer Options*, LISWA Research Series No. 4, 1993 (reviewed by Frank Upward in this issue of *Archives and Manuscripts*).

In none of these publications are Australians yet addressing the question which is emerging as of central importance: whether records are in fact being captured by the electronic information and documentation systems archivists/records managers are seeking to regulate and manage.

## ENDNOTES

1. I acknowledge the contribution of Workshop participants to the unpublished report on which this article is based, and the assistance of Glenda Acland and Steve Stuckey by way of encouragement and critical comment. I also record the gratitude of Workshop participants for David Bearman's generosity in sharing with us his intellect, vision, energy and good humour.
2. These sessions were supported by the Workshop text book, voted an excellent choice by participants, G. B. Shelly et al, *Systems Analysis and Design*, Southwest Publishing, Cincinnati, 1992.
3. David Bearman uses this phrase in his preface to Margaret Hedstrom (ed.), *Electronic Records Management Program Strategies*, Archives and Museum Informatics Technical Report No. 18, 1993.
4. David Bearman and Margaret Hedstrom present the model for archival activity developed by David during the Workshop in 'Reinventing Archives for Electronic Records: Alternative Service Delivery Options', in Margaret Hedstrom (ed.), *Electronic Records Management Program Strategies*, op. cit. It has subsequently been used successfully at Monash as a framework for teaching records management and archival principles, exploring transformed practice and defining roles for a records management/archival 'proto-profession'.

5. David Roberts' review of Charles Dollar, *Archival Theory and Information Technologies: The Impact of Information Technologies on Archival Principles and Methods*, Ancona, University of Macerata, 1992, in *Archives and Manuscripts*, vol. 21 no. 2, November 1993.
6. David Bearman, 'Electronic Mail. Is it a record? How can it be managed?', a talk for the Society of Canadian Office Automation Professionals, Ottawa, March 31, 1993. See also David Bearman's article 'Managing Electronic Records' in this issue of *Archives and Manuscripts*.
7. The functional requirements for recordkeeping defined by the University of Pittsburgh project are published in David Bearman, 'Record-Keeping Systems', in *Archivaria* no. 36, Autumn 1993, pp. 16-36.
8. David Osborne and Ted Gaebler, *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*, Penguin, New York, 1992.
9. David Bearman and Margaret Hedstrom, 'Reinventing Archives for Electronic Records' op. cit. In this article, David and Margaret report on the outcomes of the Alabama workshop and incorporate additional options 'imagined' at Monash.
10. Quoted from draft papers of the RMAA's New Technology Committee on the development of an electronic records management policy.
11. *ibid.*
12. David Bearman, 'ASA Annual Conference', in *Archives and Museum Informatics*, vol. 7 no. 2, Summer 1993, p. 10.