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iSchools and Archival Studies

Abstract

Whispers and rumors about the iSchool movement lead some to fear that this represents yet another shift away from the valued traditions of library schools, threatening something far different than what library science pioneers ever envisioned. Predating the iSchool movement, however, were other programmatic shifts such as those that led to the formalization of graduate archival education. This essay argues that such evolution is essential to our future, as iSchools tackle the increasingly complex issues confronting a digital society. We consider the mission and history of iSchools and of archival studies, the basic elements and concepts of archival studies that are critical to iSchools, and the relationship between iSchools and the changing nature of personal and institutional archives.

Keywords

iSchools, archival studies, archives, library and information science

Introduction

American graduate archives programs have been connected to library schools and then library and information science schools for more than a half-century, competing for a while with history departments but emerging as fully embedded in the former by the 1990s (some would argue even before then). How are graduate programs in archival studies affected by the transition of many of the traditional library and library and information science (LIS) schools to the newly emerging information or iSchools? What is the place of archival studies programs in iSchools? Such questions might have interesting precedents if we bear in mind that many of the varying definitions of information, some in use in the newer iSchools, stem from the traditional variants of these schools (for example, Bates 2005; Buckland 1988, 1991; Shera 1965, 1966).

More importantly, what new possibilities open for enhancing the archival studies programs in a time when archivists increasingly are facing working with digitized or digitally-born documents? When we originally proposed this paper for the 2008 iConference, the primary motivation behind it was the sense by some graduate archival educators that their role and that of the archival profession was being somehow lost in or neglected by the iSchool movement. However, after due consideration, we are seeing how a stronger connection between archivists and the archival profession and iSchools could deal with many of the challenges presented by the transition to the digital age. There are new and emerging interdisciplinary avenues for those in archival studies programs to follow, such as what Seamus Ross is doing at the University of Glasgow with the Humanities Advanced Technology and Information Institute or what Anne

Gilliland is doing at UCLA with the Center for Information as Evidence. Both Ross and Gilliland come from the archives community, and the kind of collaborative work they are doing may suggest the future for what archival studies programs become. We emphasize that this essay is a preliminary exploration, intended to start conversation about a relationship (given the early formative stage of both archival education and iSchools) that is in a nascent developmental stage.

This paper takes a snapshot of the evolving role of archival studies in an increasingly digital world and considers, in particular, the convergence of this evolution with the emergence of iSchools. It reflects on the societal and technological context that is driving this symbiotic relationship, in the interest of stimulating discussion, debate, and further analysis. We begin the discussion by reviewing several foundational definitions, some of which remain in a state of flux reflecting the transitional character of the disciplines involved. Following the section on definitions, we discuss the historic roots and contemporary trends in archival education, building to the dominant theme of the paper: strengthening archival studies in iSchools.

Setting the Scene: Basic Definitions

Discussing an issue such as archival studies, and all the variation of terms represented by the archiving function, can become confusing when we discuss it in the arena of information studies. It is important to provide some basic definitions up front so that we are all on the same page. In the transitional era from print to digital, from paper to electronic, some basic concepts -- such as archives or archive or archiving -- can get confused. And, as well, in the shifting from library to library and information science to iSchools as the past, present, and future home for the education of information

professionals such as archivists, professional missions, identities, and partnerships may be changing in radically new ways. In this transitional era, even when friendly and like-minded professionals, educators, and scholars sit around the table to discuss issues of mutual concern and interest, care often must be taken to ensure that everyone understands what is being discussed. Ironically, we often need to be more precise in our definitions (such as with records or documents) and broader in how we define the scope of our responsibilities (such as in our appraisal work and in the ethical ramifications of such work) (see Cox, 2000, 2004, 2006).

The first thing to understand is that when we write or speak of archives we are not referring to backed-up data or old records and information with no other value than as some reminder of the past. Archives encompass organizational, governmental, personal, and family records maintained because of continuing or enduring values to their creators, particular research clienteles, and society. These documents are preserved because of evidence, information, accountability, and corporate or public memory values. And archives exist in every kind of organization – government agencies, corporations, cultural agencies such as libraries and museums, universities, and community groups; they are also created and maintained by individuals and families. The most comprehensive, basic glossary, definition for archives is as follows:

> 1. Materials created or received by a person, family, or organization, public or private, in the conduct of their affairs and preserved because of the enduring value contained in the information they contain or as evidence of the functions and responsibilities of their creator, especially those materials maintained using the principles of provenance, original order, and collective control; permanent

> records. – 2. The division within an organization responsible for maintaining the organization's records of enduring value. – 3. An organization that collects the records of individuals, families, or other organizations; a collecting archives. – 4. The professional discipline of administering such collections and organizations. – 5. The building (or portion thereof) housing archival collections. – 6. A published collection of scholarly papers, especially as a periodical (Pearce-Moses, 2005).

While this definition covers all the bases, at least as traditionally seen within the modern archival profession of the past century or so, it also generates some questions.

Like library science education, the education of archivists emerged from a world of paper records, information systems and technologies generating paper records (typewrite and carbon paper to early personal computers and word processing), traditional bureaucratic structures characterized by the thinking of Max Weber and Frederick Taylor, and compliance systems and information policies geared to paper records (such as represented by the Fourth Amendment notion of privacy). All this is being challenged by the networked world of the Web and the post-9/11 world of security, transforming notions of government intrusion and control, personal privacy, and portable digital information systems – just to consider some aspects. How do traditional principles of archives administration hold up in our emerging digital era? What is the timetable for the complete shift from paper to digital and the implications of this for the education of a new generation of archivists? Are archivists part of the information professions, or part of the historical or cultural heritage fields, or all of these and more? What is the nature of the knowledge domain of the archivist, and how does it intersect

with the information sciences? How is the mission and work of the archivist evolving in light of digital recordkeeping and information systems?

For many outside of the archives profession, archival work and the mission archivists and their programs are associated with is preservation, but ~~even~~ preservation management and conservation are also distinct fields, with their own educational issues and standards. Here is a standard definition of preservation as noun and verb:

> n. ~1. The professional discipline of protecting materials by minimizing chemical and physical deterioration and damage to minimize the loss of information and to extend the life of cultural property. – 2. The act of keeping from harm, injury, decay, or destruction, especially through noninvasive treatment. – 3. Law · The obligation to protect records and other materials potentially relevant to litigation and subject to discovery. v. ~ 4. To keep for some period of time; to set aside for future use. – 5. Conservation · To take action to prevent deterioration or loss. – 6. Law · To protect from spoliation (Pearce-Moses, 2005).

What this translates into is the idea that preservation is really a commitment to maintain information, evidence, or an artifact over time whatever it is made of or how it is originally created; while this has often been seen as synonymous with the concept of permanence, archivists themselves have debated about whether it implies continuing (meaning as long as there is some reason for keeping) or enduring (meaning as long as possible) (O'Toole, 1989). Such debates have only accelerated in intensity as we have moved from paper to digital sources (considering such issues as record reliability, authenticity, and other traditional concerns expressed by archivists about records and recordkeeping). Preservation also encompasses the function of conservation and

restoration (including hands-on treatment and repair), but the focus is on preservation management with responsibilities ranging from facilities conditions to proper storage and handling procedures and to making decisions about reformatting (digitizing, microfilming, and migrating or emulating). Preservation is generally seen to be the crux or end result of archival work (although archivists destroy more than they save – a fact that surprises many outside of the field, as well as a good number within), and it is a focus archivists share with librarians and museum curators. Preservation is a reality-check against all the hype of the wonders of creating, harnessing, and using more information than any other era in world history.

There has been a tension between the possibility, promoted by futurists and pundits, of saving everything that is produced digitally. This is usually based on the increasing power and capability of information technology and the decreasing costs of the technology, while ignoring social, political, cultural, and other issues. However, it is certainly the case that what archivists have traditionally worked with is shifting from paper systems (and an emphasis on records as artifacts) to the digital (and an emphasis on the virtual). While there will always be a need for conservators, for example, to work with historical documents and other artifacts, the increasing efforts to digitize traditional holdings to lessen wear on originals and to increase remote access also suggest that matters like knowledge of digital technologies, new research and experimentation on issues like appraisal and selection, and new approaches to ensure reliability and authenticity of both digitized and digitally-born records suggests the need for continuous revamping of graduate archival education and perhaps hints at why such education in new iSchools has great promise.

The digital era has brought with it all sorts of new questions and challenges for those interested in preservation matters. How has the concept of preservation been challenged or transformed with the growing use of and dependence on digital systems? Are digital advocates still arguing that all information sources can be saved and effectively used? What is the ideal weighting between traditional and digital preservation in educating archivists (and preservation administrators)? Christine Borgman, in her important new book on digital scholarship, casts it in this manner: "Preservation and management of digital content are probably the most difficult challenges to be addressed in building an advanced information infrastructure for scholarly applications" (Borgman, 2007, p. 7). Her use of "curation" may not be necessary as a replacement for preservation, but at least it serves as a useful mechanism for representing preservation as a function extending from traditional documentary and artifactual sources to their digital surrogates. The digital curation conference held at the University of North Carolina School of Information and Library Science in April 2007 and its ongoing project to build a digital curation curriculum may be another example of how traditional LIS schools are shifting to support new archives education venues (for information, see http://www.ils.unc.edu/digccurr2007/).

Even archivists have tended to be fairly loose in their definitions. The increasing creation, maintenance, and use of *records* in electronic information systems have pushed archivists to try to be more precise. However, at the same time, these systems and the Internet/World Wide Web have introduced more complex record genres pushing standard definitions or concepts derived from best practices and new needs. The work of the archivist has always been centered about the identification, preservation, and providing

access to "records" possessing archival value, but there has been a growing recognition that the notion of records has shifted and expanded. A record has been defined as a

> n. ~ 1. A written or printed work of a legal or official nature that may be used as evidence or proof; a document. – 2. Data or information that has been fixed on some medium; that has content, context, and structure; and that is used as an extension of human memory or to demonstrate accountability. – 3. Data or information in a fixed form that is created or received in the course of individual or institutional activity and set aside (preserved) as evidence of that activity for future reference. – 4. An instrument filed for public notice (constructive notice); see recordation. – 5. Audio · A phonograph record. – 6. Computing · A collection of related data elements treated as a unit, such as the fields in a row in a database table.– 7. Description · An entry describing a work in a catalog; a catalog record (Pearce-Moses, 2005).

Some archivists adhere to a notion of archival science, based on the seventeenth century emergence of diplomatics, derived from Jean Mabillon's *De Re Diplomatica* (1681) and mostly fixated on determining whether a document is authentic or a forgery or a copy by examining internal and external characteristics. In North American practice, the notion of records was largely taken for granted, following general definitions created in government laws or best practices in corporate and other organizational settings. However, the increasing use of information technology led to the need to revisit basic definitions and to re-engineer the uses of older archival sciences such as "diplomatics" (see, for example, Duranti, 1998).

After a generation of largely ignoring the implications of the computer for the

creation and maintenance of archival sources, archivists found themselves engaged in defining more precisely the notion of a record, the elements of recordkeeping systems, the concept of evidence, and other such matters. Some major research projects, and a considerable amount of debate within the archival community, generated a large literature on the nature of the record. However, the establishment of the World Wide Web, other concepts of information documents, postmodern scholarship on the idea of the "archive," and high profile legal cases all seemed to broaden the idea of the record far beyond what anyone could have imagined. Cell phones, digital cameras, and other portable devices contributed to a broadening notion of how records could be used and what records represented. Such changes and their implications for archives and recordkeeping, and the educational and scholarly reactions to these changes, may reflect some of the differences between the notion of archival studies (mostly seen as an all encompassing term for the knowledge supporting basic – some might say traditional - archival functions and practices) and archival science (based on the centuries-old concepts deriving from diplomatics and the reliability and authenticity of texts, now directed at digital systems). With many disciplines studying archives, and applying new theories and models to archives and recordkeeping, it may be that neither umbrella term is completely useful or meaningful at the present time (see, for example, Cook, 2000 and 2001) – and this may be yet another reason for the potential of archival programs located in iSchools (where other useful sciences reside and where additional research, reflection, and reformulation may occur).

Even those involved in some of the research projects have questioned some of their presuppositions and assumptions, while still remaining committed to the notion that

records are important to society, institutions, and citizens. David Bearman recently revisited the University of Pittsburgh project of the early 1990s on the functional requirements for evidence in recordkeeping and concluded that the basic structure for preserving essential evidence in digital systems is sound but not implemented by any archives (Bearman, 2007). Heather MacNeill has shifted away from some of the authoritarian perspectives reflected in the InterPARES project, and in one essay she considers the strengths and weaknesses of modern diplomatics, concluding that the diplomatics approach does not reflect the reality of electronic recordkeeping but provides a useful conceptual model for evaluating such recordkeeping. In her opinion, the projects utilizing diplomatics suggest that the reality of these electronic systems is that they are "too complex and diffuse for any one method to capture." As a result, the archival community is left with lots of questions to ponder. Are new digital forms of records still functioning as transactions of business with the elements of warrant, structure, content, and context still relevant? Are researchers and others needing access to records still concerned about matters of authenticity and reliability as they once used to be? Are new means of providing access to more complex digital information sources trumping issues of definition and maintenance? Have the continuously emerging digital documentary forms eased the way for more postmodern notions of evidence and information? Although practitioners may wring their hands over such matters, they represent wonderfully engaging and challenging issues to theorize about, conduct research about, and speculate about solutions in the future (such as the predictions about the emergence of the paperless office) (Anderson, 2008).

This brings us to the definitional issues surrounding iSchools. Just what are they

and how do they differ from library and information science schools? While the emergence of iSchools as a consortium is relatively recent, their origins reflect a more sustained dialogue among faculty and deans of a number of library and information science and related programs around the broader implications of information technologies on their curricula, their institutions, and the information professions. A summary of this dialogue (Larsen, 2010) concluded: "Informed by decades of debate and responding to exceptionally rapid changes in technology and uncertainty in public policy, iSchools foster the development of an intellectual space where true interdisciplinarity plays out. In so doing, they introduce a range of challenges to traditional university structures and practices … as they create an environment where issues of information are addressed systematically, regardless of disciplinary heritage or presumed 'ownership'. In this way, iSchools respond to the salient issues of the time by stressing the production of strong results. They are in a constant state of adaptation within their core competencies, while building necessary bridges among disciplines." Archival studies is clearly a vital participant in this interdisciplinary dialogue.

Education and the Formation of Archival Knowledge

It is easy for professional schools, often burdened with immediate concerns such as practitioner competencies and the sometimes political matters of credentialing and program accreditation, to ignore their own histories (Labaree, 2004; Khurana, 2007). Archival studies or science programs are no exception. Archives are ancient, and there were formal training programs for scribes in the ancient world. The modern archives profession is about a century old, dating to the late 19th century in Europe and slightly younger in North America. The formal education of archivists emerged slowly, also

grew slowly, and today it has a finger hold in library and information science schools and, to a lesser extent, in history departments. Where are these programs going?

The evolution of the education of archivists has followed a pretty clear path. Initially, in the early twentieth century, individuals entered the field basically through a kind of informal apprenticeship or on-the-job training; some still enter the field in this manner. Single graduate courses began to appear in history departments and library schools in the 1930s, and this remained the prevalent avenue for any graduate education until the 1970s. In the 1970s, a three course sequence appeared, mostly situated in what had become Library and Information Science schools; this set of courses – usually an introductory course, an issues seminar of some sort, and a fieldwork or practicum – was endorsed by the first Society of American Archivists education guidelines in 1977. Also in the middle part of the twentieth century, we witnessed a proliferation of institutes, probably a reflection of the lack of comprehensive graduate programs and the preference by the field for skills training. The emergence and decline of public history programs, in the 1970s to early 1990s, including some coursework on archival studies, both enriched the discussion about the education of archivists and provided a distraction from ramping up the quality of graduate archival education programs. It is rather difficult even to argue that there was anything approaching what could be termed a comprehensive education "program" in this period.

All of this began to change in the 1980s, when universities, mostly in LIS schools, began to hire regular, tenure stream faculty to teach in the archival studies area. Soon, the SAA guidelines began to concern more comprehensive education. Within a decade, there were schools, again mostly in LIS programs, hosting multiple faculty specializing in

archives and related disciplines such as preservation and records management; this represented a remarkable shift from just the decade before when few thought there would ever be schools supporting *one* such faculty member. Even more remarkable has been the growth of programs supporting doctoral students in the archives field; in 2008, when this essay was first written, for example, Richard Cox had eight such students and Anne Gilliland at UCLA had thirteen, more between these individuals than the entire field could boast two decades before.

This is a very impressionistic sense of the evolution of graduate archival education programs, but there are some obvious characteristics we can point to in where we are today. While we have a number of programs with impressive clusters of courses and faculty, we have only a couple of separate masters degree programs, the preparation of new faculty members is not keeping pace with demand, and archival studies or science is seen as an uncertain appendage of information sciences or historical studies. Even when new archival masters degrees have been announced, the focus seems to be more on teaching and professional mentoring than on research and knowledge creation (such as the recent creation of an online Masters in Archives and Records Administration at the San Jose State University School of Library and Information Science). Professional support for graduate education is unsteady by the professional associations, which seem as much oriented to apprenticeship training and lowest common denominator concerns (as reflected in certification programs in SAA and ARMA). With the exception of a few programs, preservation education is even more tenuous. How LIS programs or iSchools can proceed with educating the next generation of information professionals without some attention to the long-term maintenance of sources deemed to possess archival value

and requiring preservation seems questionable if not foolhardy. Will we digitize other materials only to see these digital surrogates disappear relatively quickly (when compared to how long older formats lasted)? Will we continue to build information systems without being able to preserve records and their evidence or information needed over the long haul?

It is not incorrect to suggest that most graduate archives program are small, conservative affairs doing the best they can to orient students to the field. When you are limited in faculty and the number of courses, you face challenges in dealing with the fast-paced change of digital information technologies. This is doubly difficult given the interests many students bring with them based on their exposure to archives as undergraduates often working with older records in museums, university special collections, and historical societies or historic sites. This is changing as students are learning about various technologies or growing up with them. However, it is a great leap we are still facing to get into newer areas of digital scholarship, electronic records management, and other such areas, partly because of strides such traditional repositories are making in dealing with digital systems. For example, a student interested in museums must know or may be quickly exposed to the uses of information technologies by these repositories. Paul Marty hints at this, writing, "Museum informatics is the study of the sociotechnical interactions that take place at the intersection of people, information, and technology in museums" (Marty, 2008, p. 3). In fact, the various authors in this compilation of essays argue that information science and technology "have changed the very nature of museums, both what it is to work in one, and what it is to visit one" (Marty and Jones, 2008, p. xii). These technologies are providing new ways to study documents

and artifacts as well as the means to provide different and more compelling interpretations both in the institution and by remote access. We see the same trends in archives and in other institutions – corporate, museum, and library – employing archivists. The very nature of archival work is changing, and we need individuals who are intellectually engaged by the challenges the digital technologies are bringing to records and information systems; graduate archival programs situated in iSchools might attract such individuals tomorrow where the traditional LIS school tended to attract individuals interested in traditional records forms and the cultural and historical aspects of recordkeeping.

In the past, these graduate archival education programs have been severely limited in their scope and flexibility. They have been generally focused on traditional records systems and archival principles built on or deriving from such systems, usually because of limited resources and faculties stretched often to teach in other areas as well as to try to provide service to the professional community. The traditional focus also occurs because so many of the incoming students have developed interests in archives and preservation through their orientation to cultural organizations such as historical societies, museums, and historic sites, such interests often prompted by their own undergraduate careers primarily in the humanities. Obviously, we can detect a shift in this as well as these younger students grow up and mature with more sophisticated knowledge about and experience with digital information technologies and their undergraduate disciplines and the cultural institutions they visit reflect more involvement with a greater array of technologies. Just as the quest for an understanding of the past (even if it is the most antiquarian of interests) engages these individuals, a growing

preoccupation with the nature of information technologies and their potential use in harvesting historical data or re-creating the look, feel, and sound of the past also will cause them to demand a greater presence of technologies in the archives and preservation curriculum. We may ultimately see the kind of emotional attachment to the digital systems as we have been accustomed to seeing with the look of printed books, the feel of paper documents, and the touch of artifacts – sentiments that have often attracted certain people to the archives and preservation management programs in the LIS schools or history departments. While Alberto Manguel gushes, "My books hold between their covers every story I've ever known and still remember, or have now forgotten, or may one day read; they fill the space around me with ancient and new voices," (Manguel, 2008, p. 14) there is no reason to think that we couldn't say the same about the computers we carry with us or surround ourselves.

There are, of course, still challenges in developing an archives and preservation curriculum that fully integrates digital technology. While there has been increasing attention to electronic records management issues, usually presented either in a dedicated course or integrated throughout curriculum, this has proved to be only one of many such issues needing to be confronted. There is also the need to teach about the historical evolution of records and recordkeeping systems and all the other core functional or knowledge areas (and their principles and applications) of reference and access, preservation, public programming and outreach, management, legal issues – just to provide a sample of such other concerns. Understanding records and recordkeeping systems and technologies requires an understanding of nearly all the cultural, economic, political, historical, and other factors affecting the nature of these information or evidence

systems. Perhaps the greatest problem in dealing with such matters derives from the limitations posed by small faculties, adjunct reliance, the nature of archives in the immediate area of the university offering these courses, and other similar factors. It is truly difficult to build comprehensive archival education programs when there are only one or two specialized faculty with regular appointments (who have a greater array of responsibilities than just teaching) or when archives and preservation programs in the immediate geographic area of the school are sparse or limited in their own scope of activities (how many graduate archival education programs have the opportunity to work with an archives program supporting a full-fledged electronic records operation?). There is no question that the archival community missed the boat in establishing archival education programs in an earlier era when there were more resources and a greater willingness to establish and populate such programs. And, to a certain extent, the identity of the existing programs is mostly shaped by their affiliation with a history department or library and information science school rather than their own sense of professional mission or disciplinary scope. Such issues prompt even more self-reflection about what the future holds as LIS programs evolve into iSchools.

It is not as simple as just worrying about how to orient traditional archival studies to new and emerging digital document and information forms. The notion of archives and the "archive" is becoming far more complex than how we used to imagine it. Scholars from a wide range of disciplines -- literary and cultural studies, anthropology, history, sociology, political science, and other fields -- are studying archives or the "archive" and adding new understanding to what ought to be included in archival studies (some of this is reflected in some of the present graduate archival education programs, but there is

reason to expect that the emerging interdisciplinary iSchools also will encourage such research and scholarship). We have new and challenging notions of what a document represents and of how archives create and sustain public or collective memory; teaching in such an interdisciplinary way also pressures archives faculty to expand their own horizons of scholarly endeavor or to build new partnerships for collaborative research and teaching. To educate the next generation of working archivists requires more than merely teaching from basic practice manuals or assigning articles from the half-dozen or so leading archival journals. We need to immerse our students into a very large and deep ocean of interdisciplinary studies on the archive, ranging from academically-trendy cultural studies to the generally more staid information sciences.

This broad and expanding scholarship represents a great range of notions about archives, archival documents, and archivists. While some archivists ignore this literature, or dispute its relevance for their own work, it is clear that this scholarly work is enriching our knowledge of the records archivists work with; it is easy for individuals working closely with personal papers, literary manuscripts, family records, and institutional documentation to take for granted the veracity, reliability, and usefulness of the materials (reading scholarly and other accounts about the nature and use of such documentation provides other useful perspectives enriching how we read and interpret these sources). This literature is also beginning to study archives and archivists in new ways, such as with the rich and deep literature on the idea of public or collective memory, an area where scholars of all sorts are studying not just museums, libraries, and historic sites, but archives (the records, the building, the institution, and the discipline) as well. For example, for several generations archivists clung to concepts of objectivity in their tasks

of appraising and describing records. Now, many archivists are far more aware of the ways in which they deliberately or inadvertently shape the documentary heritage. New insights, from literary and cultural studies scholars, have made archivists (at least some of them) more open to new forms of collaboration with both records creators and records users.

New forms of scholarship -- embracing digital means of collaboration and access -- are also suggesting new uses of archives (both digitally born and digitized). Recordkeeping, and the scholarship on it, represents, according to Alistair Tough and Michael Moss, a "relatively new field of study. The boundaries of the field are poorly defined and porous. This is characteristic of emerging disciplines and need not be a cause of professional insecurity" (Tough and Moss, 2006, p. ix). But it is even more complicated than merely an *emerging* discipline. Maria Economou suggests the differences in considering real rather than virtual sources, arguing, --"although viewing the digital version will never replace the experience of examining the original, in certain cases this is the only way to provide access to important objects that would have otherwise remained known only to a few scholars . . . . In this way, new technologies offer a medium which circumvents often-arbitrary limitations and boundaries imposed by the history of the collections, the vision of academic disciplines, practical consideration of space, or just chance" (Economou, 2008, p. 149). Integrating traditional, emerging, and new records or archival technologies is a difficult, but necessary, task for all archival educators. It requires them not only to contend with the problems of the present, but also to grapple with what has happened in the past and to examine comfortably the possibilities of the future.

We have conflicting views (probably *many* conflicting views) of our present Information or Digital Age, both within the archival community and outside of it. For the moment, let's just consider some dramatically contrasting perspectives. Mark Herring writes, "if we define *knowledge* as any bit of datum, right or wrong, factual or not, fraudulent or accurate," then the digital world is fine, but "if this is the definition of information that we want, then, yes, the Web should replace all libraries. On the other hand, if knowledge includes something about accuracy, appropriateness, balance and value then the Web cannot arrogate to itself a place of preeminence to knowledge-seekers" (Herring, 2007, p. 27). This captures a huge literature of speculation about the perverse effects of the digital universe on reading, publishing, and knowledge, or, and maybe more accurately, a growing nostalgia for the printed book and other traditional information sources. What gets lost in the position espoused here, however, is a basic understanding of what the Web is, vs. a website, or an institutional repository, or a digital library. Jeff Gomez, in his discussion about the future of the book, strikes a somewhat different chord: "And so to expect future generations to be satisfied with printed books is like expecting the Blackberry users of today to start communicating by writing letters, stuffing envelopes and licking stamps" (Gomez, 2008, p. 78). Gomez makes a good point, one that many would attest to today, including the authors of this essay. Not a day passes that we don't read from print, search on the Web, and receive and respond to e-mail.

It is even more complex than a belief or lack of faith in technology. Well-known cultural historian Anthony Grafton suggests how we are in a complicated transitional area, a road with many wrong turns and misleading signage. "For now and for the

foreseeable future," Grafton argues, "any serious reader will have to know how to travel down two very different roads simultaneously. No one should avoid the broad, smooth, and open road that leads through the screen." Grafton also believes we need to be able to continue to examine original documents, taking what he calls the "narrow path": "The narrow path still leads, as it must, to crowded public rooms where the sunlight gleams on varnished tables, and knowledge is embodied in millions of dusty, crumbling, smelly, irreplaceable documents and books" (Grafton, 2007, p. 54). In other words, there will always be some of us who want to touch as well as see, to experience as well as ingest, what they read.

This has interesting implications for how we think about archives and, certainly, how we educate the next generation of archivists. A quarter century ago, leading archivist F. Gerald Ham, hinted at the relationship between what archivists do and what they work with: "I subscribe also to the notion that our work, and indeed our behavior as archivists, is determined by the nature of the material we deal with: we are what we accession and process" (this is the theme of Ham, 1981). At the moment the majority of archivists seem inclined to deal with traditional paper records, but there is a decided shift (and need) for working with digital records. Fortunately, while the need is real, we may have some time to build the kinds of educational programs we need. Christine Borgman, considering the emerging area of cyberscholarship, writes, "We are currently in the early stages of inventing an e-Research infrastructure for scholarship in the digital age. It may take twenty, forty, or sixty years to realize that vision, by which time the technology and tools will be quite different from today" (Borgman, 2007, p. 245). While we must resist lulling ourselves into complacency, we can afford to understand that we have ample room

for experimentation and exploration.

Nevertheless, archivists have struggled, over the past couple of decades, with the implications and products of new electronic information systems influencing the creation of records. In a recent survey about electronic records management, Robert Williams and Lori J. Ashley conclude, "Most organizations have serious operational shortfalls regarding the processes by which they manage electronic records, one of their most important assets" (Williams and Ashley, 2007, p. 45). Richard Pearce-Moses, while he was President of the Society of American Archivists, declared, "As we face the challenges of electronic records, we must also face our need for new knowledge. We need new tools for new materials. Where to begin?" (Pearce-Moses, 2006, p. 3). Ken Thibodeau, of the U.S. National Archives, added, "While we are still at the dawn of the digital era, before too many cultural assets are lost, and before the technology has raced utterly beyond our ability to catch up, we need to construct concepts, methods and operational systems that can preserve and provide access to digital information" (Thibodeau, 2006, p. 6).

These sentiments reflect a consistent notion that archivists are always, somehow, behind the 8-ball when it comes to dealing with electronic records and recordkeeping systems. However, archivists may be climbing out of this pit, as Joanna Sassoon suggests in the emerging of a "new culture within the archival profession": "This culture would acknowledge that all formats in archival custody have specific needs which require specialist knowledge. These new specialists would be educated and trained using a new range of texts which build format specific understandings of archival material, their research potential and their requirements to preserve their 'recordness'. This approach

may be embedded into our professional culture through creating an understanding that, like the new archival format of electronic records, *all* archival formats require specialist knowledge and skills" (Sassoon, 2007, p. 143). What better way to help jump-start the creation of this new culture than by embedding archival studies programs in the emerging iSchools? Will it happen, actually, if we don't work to make sure archives programs are within iSchools, new ones or ones emerging from older traditional forms?

Strengthening Archival Studies in iSchools

As we have tried to demonstrate, graduate archival programs have been traditionally located in history departments and library and information science schools. Over the past two decades especially, these programs have mostly shifted to the LIS programs where some have developed fairly expansive curricular offerings and employed two or more regular faculty with the expectations of this faculty contributing to the broader research, teaching, and service missions of these schools (Cox, Yakel, Wallace, Bastian, and Marshall, 2001). However, as some LIS Schools evolve into iSchools, what does this suggest about what prospective archivists ought to be learning? Given that students presently preparing to be archivists may be working far more with digitally-born documentary sources or making digitization decisions about traditional records (or, for some, exclusively working with digital materials within the next decade or so), it stands to reason that present students ought to be more fully grounded in the electronic information and recordkeeping systems while still learning about critical archival principles and where, why, and how these principles may be challenged by the new digital documents.

This rationale correlates with the early motivations that led to the formation of iSchools. Many of the founding iSchools (see www.ischools.org) originated as schools of library and information science, for which the dominant focus had been on information and how people use information, while other iSchools came from a tradition more closely aligned with computer science, in which the dominant focus was on technology and how technology serves human needs and interests. The iSchools evolved in response to students', employers' and society's needs becoming increasingly holistic in relation to information and information technologies. The curricula, the research, and, indeed, the schools' missions, were expanding to address more explicitly the relationship between information, technology, and people. Schools from both historic traditions recognized their convergence through a mutual commitment to learning and understanding the role of information supported by advancing technology in human endeavors.

Central to the evolutionary development of iSchools has been the conviction that expertise in the management and use of all forms of information is required for progress in virtually any endeavor in science, business, education, or culture. Information professionals' core competencies must include both a sophisticated understanding of how humanity uses information (from the individual through society in the large) as well as proficiency in the enabling technologies and their applications.

In other words, there is nothing in the new iSchools that suggests exclusion of the archival realm; indeed, the kinds of elements being defined for these schools suggest an exciting new way to deal with the challenges of electronic records issues that have long challenged the archival community. The focus by archivists on evidence can be seen as merely a component of the information and information systems these schools are

interested in. There is another promise here. As iSchools evolve and their partnerships grow by encompassing other schools far removed from the traditional LIS realm, there may be new opportunities to expand the archival area into other sectors. Archivists have long expressed the desire, captured in the writings by individuals like David Bearman, Terry Cook, and Margaret Hedstrom, (see, for example, Bearman, 1994) to influence software designers and vendors, corporate entities, government regulatory agencies, and other creators and sustainers of records and information systems; could iSchools represent a better venue for accomplishing this goal by equipping a group of new archivists well-versed in both archival principles and information technologies?

What we might be seeking is the regaining of the ancient status of scribes, as models for archivists functioning as scholars of both recordkeeping and digital records and information systems. Karel Van Der Toorn contends that in the ancient world, the "scribes were not merely penman and copyists but intellectuals," but the "academics of their time." In ancient Israel, scribes were part of an exclusive group: "The skills of the scribes – of reading, understanding, and interpreting – commanded general respect. The scribes held the key to the symbolic capital of the nation" (Van Der Toorn, pp. 57, 106). Philip Brooks, more than three decades before this study of ancient scribes, provides a glimpse into how many archivists hoped to see their professional community function in a way that is much more vital to society and scholarly disciplines: "A competent archivist is to be looked upon as a scholarly colleague of the researcher, far more than solely a preserver and a caretaker. His knowledge of the sources can contribute materially to the user's evaluation and understanding of them" (Brooks, 1969, p. 36).

At present, some in the archival world have lost this sense of the archivist in society

or the archival mission. Most archivists complain either that they are invisible to society or that society and its organizations hold images of archivists as low-level clerks. Some of this derives from misperceptions of records and recordkeeping as simply fodder for bureaucratic inertia or obstacles to be overcome. Records as important safeguards for accountability, vessels of essential evidence, and foundations for social and corporate memory have been lost because archivists sometimes seem to portray the notion that they are merely antiquarians concerned in preserving documentary debris for the use of a few scholars, genealogists, and local historians. Might this also be the result of how LIS schools have been traditionally seen by many, and why library science has been supplemented by information science and why iSchools have emerged with an even broader agenda and mission?

Teaching (and researching) about archival studies may provide a kind of liberating perspective for what we have had over the past half century or so as reflected in history departments and library and information science programs. Seamus Ross, as one example, suggests that, "Digital archives combined with new technologies will liberalize scholarship. They will enable simultaneous access to a range of sources (both local and distant) and facilitate the use of research methods not possible with conventionally printed or hand written records." Ross perceives "digital information" as a "cultural product. As we think of physical products of culture as artifacts, so we should also be thinking of digital and electronic products as d-facts (or e-facts). These new products form an essential fragment of our cultural record" (Ross, 2000, pp. 3, 12). And this can only occur in a new collaborative environment, as Diane Zorich argues: "No one can work in isolation on digital preservation and access issues because the needs and

requirements are too great. We all benefit from (and generate) economies of scale, pooled expertise, larger funding, and more robust infrastructure when we collaborate. And collaboration means not just crossing over our museum/library/archives divisions, but entering whole new communities such as science, engineering, and the commercial sector." Zorich continues, "We cannot preserve a digital object or a digital collection in isolation: we must preserve the entire digital ecosystem where the object or collection is found" (Zorich, 2007).

This is where the iSchools become such a relevant part of the solution. Archival scholars and iSchools' academics may be independently converging on a synergistic set of needs and objectives. The iSchools proponents advocate a holistic perspective inclusive of society, information and technology. This is built on a foundation of principles, traditions, and values that are the product of more than a century of practice in librarianship and, perhaps, half that in the advancement of computing and communications technologies. A broad base of technologies, standards, and policies has emerged, from MARC, AACR2 and Z39.50 supporting traditional library operations to TCP/IP, XML, and OAI/ORE enabling broader network-based access to information. The Cyberinfrastructure program (to which the iSchools have contributed substantial intellectual substance) is largely a federal acknowledgement of the emerging synergies that necessitate the development of information infrastructure on behalf of society in the large, of regional and disciplinary communities, and of individuals.

The iSchools arguably provide the one forum on campus where interdisciplinary scholarship can engage disciplinary scholars (e.g., biology, chemistry, history, humanities, social sciences) with information scholars (iSchool faculty and researchers)

in a coherent and scalable manner. The iSchools enable scholarly attention to the issues of information selection, curation, retention, and preservation that are of lesser interest to most disciplinary scholars, while also advancing the state of knowledge in these areas, fueled by the diversity of issues, traditions, and requirements of the separate disciplines. These interdisciplinary projects could easily evolve into an array of joint degree programs, minors, and related interdisciplinary educational opportunities that have been barely envisioned, but could redefine the image of information-intensive, multi-disciplinary scholarship.

So why should archival educators care about the iSchools, beyond the fact that many of them have evolved from more traditional LIS schools? As has become clear, archives in a digital world introduce an entire new range of questions, challenges, and opportunities. But the challenges are not ones of mission or role, but ones of instantiation… what does it mean in the 21st century to preserve the "records" of a digital society? The iSchools are the only places in academia that are prepared to approach these questions from a holistic perspective; indeed, this is the basic mission of the iSchools – to explore, interpret, and advance society's understanding and use of information as a "record" of its achievement.

But just as information is meaningless without structure, organization, and context, archives needs a disciplinary context. Are iSchools a more logical venue for archival studies than LIS schools, as they extend their reach through interdisciplinary relationships with other disciplines? LIS schools that retain a focus on the centrality of the library as a service organization, while a valuable societal construct, are likely to be less relevant to archival studies that must engage each of the disciplines directly (especially as so much

scholarship about archives or the archive has come from other disciplines or in a true interdisciplinary format). The iSchools' efforts to not only develop a new image, but to also transform themselves into organizations that illuminate the future for information-intensive institutions (like our universities) are responding to the same motives and forces that are impacting the archival community, but they may be a bit ahead of the archival community, increasing the value returned to the archival community. Could this be a natural alliance in which the total is, indeed, greater than the sum of the parts?

The perspective adopted by the iSchools in reflecting on their mission expands on the historic traditions of LIS schools by thinking more broadly about society's use of technology to generate, disseminate, utilize, and manage information. Peter Lyman's 2003 report (Lyman and Varian, 2003) estimated the world's information output as 5 exabytes. A related study conducted four years later (Gantz, et al, 2008) estimated the 2007 output to be 281 exabytes, suggesting a growth rate approaching 60% per year by 2011 in humanity's generation of information of all sorts. To place this in context, if you were to read one book a day for 70 years, it would total about 25 gigabytes (one ten-billionth of the information generated in 2007). And if the estimates of the San Diego Supercomputer Center are applied (Moore, et al, 2007), the cost of saving one online copy of all the information generated in 2006 plus three tape backups, using contemporary storage and server technology, would approach the national debt. Clearly there is an ongoing need for curation and some careful consideration given to what is worth saving in an increasingly digital information society.

Many institutions anticipated that *institutional repositories* could provide a sufficient solution to the problem of preserving the intellectual output of their

organizations, and eagerly installed popular open-source repository software packages such as Fedora or DSpace. Many of these same institutions were subsequently disappointed when such efforts were not rewarded by faculty enthusiastically depositing all of their papers, data sets, and related scholarly materials. Despite the fact that research and scholarly communication is increasingly dependent on datasets so large that they evade human understanding and must be analyzed by machine, the infrastructure to support such communication through space and time remains to be developed. Is this not a challenge made to order for the iSchools and the archival profession?

And here the archival profession offers something to iSchools. The concept of archival appraisal, the identification of documentary sources with enough continuing value to merit their ongoing maintenance, may offer lots of value for grappling with the information glut. Archivists can demonstrate that the challenge is not saving everything but saving the right stuff. In some cases, where data can be entirely regenerated, it may be preferable to avoid saving it in the first place. For archivists the challenge mostly in recent years has been the business of figuring out how to save the new digital documents and information systems. However, for information scientists and other professionals, the challenge may have been trying to figure out how to maintain everything. Indeed, several prominent researchers have suggested that the cost of manual metadata generation makes it cheaper to save everything than to curate and catalog it. A partnership seems in order, and iSchools perhaps provide the vehicle for this. For example, archivists are well aware that their legacy holdings in traditional formats can't all be digitized due to issues of resources and other responsibilities. Do information scientists really understand that they probably can't save everything? Even the Internet Archive is only taking periodic

snapshots of the Web and not even capturing the largest portion of the Web, the deep Web (see Arms and Larsen, 2007).

The evolving demands of eScience and other data-intensive domains clearly require disciplined attention to the development of curation and preservation strategies appropriate to the time. Irreproducible primary data and evidence, for example, should be routinely captured at the source through an infrastructure that can be tailored to specific needs, interests, and preferences, but does not require subsequent overt attention by its users. Metadata should, to the greatest extent possible, be generated automatically at the point of data capture. In addition, though, social networking experiences have demonstrated the value of enriching data through the annotations of users (including their profiles). The intention here goes beyond organizing the vast and growing collection of digital content for access and usage by humans, to include the even more challenging, and potentially more valuable, access and analysis by computers. As Rick Luce observes (see Arms and Larsen, 2007), we need "applications that support not just links between authors and papers but relationships between users, data and information repositories, and communities. What is required is a mechanism to support these relationships that leads to information exchange, adaptation, and recombination."

Rather than debate or delay the inevitable necessity of dealing with pervasive digitization, ubiquitous access to information by both humans and computers, and at-risk digital content, archivists working with (or through) iSchools can proactively help society not only understand the urgency and importance of these issues, but also to develop long term solutions. These solutions, while enabled by technology, must go far beyond the technical infrastructure to also address issues of policy, human needs and motivations,

intellectual property rights, economics, privacy, security, and a host of related concerns.

Dealing with challenges such as these relate to how archivists have played around with the life-cycle concept of records. The life-cycle concept developed as a means of visualizing how and when archivists might work with the records. At its earliest point, the concept suggested that archivists deal with records at the end of their life and that their colleagues (the records managers) deal with the records at earlier stages. With the growing use of electronic records, many archivists began to advocate for archivists to be much farther up in the cycle, even helping with the design of records systems to ensure that archival records could be captured. Some even thought that the records life cycle was obsolete and suggested the records continuum concept allowing for systems to capture archival records from beginning to preservation, even suggesting that many electronic records do not go into an inactive stage but are always active. Anyway, the issues outlined here suggest that iSchools could enable a new kind of curriculum for archival studies whereby a good deal of focus could be placed on such design issues and with how to work with designers, vendors, and other information professionals.

The curriculum might build on the notion of "content" becoming a recognized component of "infrastructure," as described in the NSF/JISC Cyberscholarship report (see Arms and Larsen, 2007, p. 1). Given this broad construct, one can then identify a range of value-added services to which users could subscribe. Gregory Crane (see Arms and Larsen, 2007, p. 5) identified a family of such services that would be of particular value to the Humanities, including services (1) to automatically catalog discrete objects within collections, (2) to recognize semantically significant elements embedded within collection objects, (3) to customize the selection and presentation of materials to the

needs and interests of a particular user, and (4) to support structured user contributions such as those emerging in social networking websites.

The curriculum would also need to reconsider curation itself, moving into realms beyond the physical artifact. The UK Joint Information Systems Committee (JISC) has taken some initial steps in this direction by fostering the development of "data journals" as a new form of scholarly publication (Overlay Journal project, 2007-present). A data journal is a peer-reviewed, reputable vehicle for scholarly communication that explicitly recognizes the intellectual challenges and value in creating credible sources of high quality data. The Andrew W. Mellon Foundation has supported similar efforts in the Humanities (Nowviskie and McGann, 2005) and Archaeology (see SAVE). These pioneering projects and others like them are fundamental to developing an understanding of the challenges in developing large-scale, coherent and consistent collections operating on robust and reliable systems, providing access and services to a large and distributed clientele.

There are opportunities for leverage here. As we have seen, the issues confronting iSchools, in general, and archival studies, in particular, share much in common, and each has a lot to do with the overwhelming impact of digital technologies. These broader sets of issues have attracted much attention, from the NSF's Blue Ribbon Panel on Cyberinfrastructure and the ACLS's study of Cyberinfrastructure for the Humanities and Social Sciences to the NSF's formation of the Office of Cyberinfrastructure. If anything, the European emphasis has been even stronger through their Framework Programmes in eScience.

These considerations have also led to fundamental questions regarding what

constitutes the scholarly record, a question that by now you will recognize as one that has occurred to archivists before. As research increasingly draws on (and generates) vast quantities of data, we have seen that data, itself, become part of the archival record of scholarly accomplishment. While well-known pioneering projects are forging new paths and new forms of scholarship, we have yet to reflect on these projects from the perspective of archival requirements. Who will do this? Genomists? Astronomers? Physicists or chemists? Not likely on their own, and not likely archivists on their own. The necessary partnerships are yet to be forged through teams that include discipline specialists and archivists. Is this not a natural direction for the iSchools with archival programs? Might it even be a reason for others to develop them?

The challenges inherent in this venture are multifold, spanning issues that are purely technical to ones that impact directly on public policy, economics, and the traditions of various scholarly communities. In the technical arena, for example, the variety reflected in the scale, structure and internal complexity of materials as diverse as digitized books, scientific data, web pages, courseware, and annotated Greek manuscripts can too easily lead to a perceived need for custom approaches that fall short of being considered "infrastructure." On the other hand, this same variety effectively precludes a single approach for all categories of content. Some middle ground must be found that accommodates a wide variety of content through a manageably small set of approaches.

The magnitude of the transformation that seems inevitable to some of us will likely impact directly on our most-cherished human organizations, their traditions, motivations, incentives, economics, and legal frameworks. How will we sort out the nature of this transformation, if not through a colloquy between those most

knowledgeable about the core issues and those most knowledgeable about the disciplinary cultures? Are not the iSchools and their archival scholars placed well to consider the core issues?

There are alternative models to consider in managing the growing scale and complexity of the scholarly record. Where should the locus of responsibility fall? Will the traditional model of scholarly publishing, led by a few industry giants, adapt to the competing interests of profitability and more open access? Might the role of supercomputer centers, which were initially established in response to the accelerating need for computational power, expand their mission to become superdata centers in response to the accelerating growth of information? How will scholars, students, and the general public be assured of access to not only the *publications* that have traditionally supported creativity, entrepreneurship, and intellectual advancement, but also to the multimedia resources, models, simulations, software, primary data, statistical records, and other diverse information resources that are now part of these endeavors? Increasingly restrictive intellectual property rights (IPR) provisions and aggressive business practices suggest this will continue to be a difficult and complex challenge.

Whatever approaches ultimately prevail will need to include consideration of stability and sustainability. An infrastructure, by definition, must satisfy this attribute, and it must apply not only to the technology, but also to the content (the data) and to the organizations engaged. These are formidable but not necessarily overwhelming challenges that could benefit from the long term sustained attention of iSchools and archivists.

If anything, as the challenges grow more and more complex, they increasingly

move into areas that archivists (not to mention information scientists and librarians) have not had to spend too much time worrying about in the past. But now the variety of issues is growing quite complex, from the technical issues of managing immense volumes of data with intricate structures and complex interactions to legal issues that impact directly on individual use of information resources to the economic interests that arise around the commercial potential (real or imagined) of information resources. Then there are the differing traditions among disciplines regarding their information, those for whom the monograph is dominant, for example, versus those for whom immediate additions to a shared database represent valued scholarly contributions, and those where new media are the venue for establishing records of creativity.

Few of our institutions, organizations, policies, and traditions welcome and adapt quickly to fundamental change. Resistance is natural, if not futile (to recall an aphorism from the not too distant past). The landscape of scholarly communication is being transformed by digital media, though, and we need to get ahead of this trend and position our iSchools as true thought leaders. We may need, for example, to be less sanguine about the industrial takeover (by Google, for example, or perhaps you prefer Elsevier) of our creative outputs. While the current focus may be on documents, copyright, and fair use, one can easily imagine this debate growing to include models, simulations, and data, for example. When the nation felt challenged by international competitors in high end computing, the federal government saw fit to compete head on by establishing supercomputing centers and investing in high end computing research. Now that research is becoming increasingly dependent on voluminous data resources, should we be building superdata centers? If so, does this not suggest a role for a new generation of archivists

and new archival theory?

Might it not be the case that the staid (some might say stodgy) discipline known as archival studies might, in fact, provide a window to our future? Having matured beyond the fantasies of storing everything, it is the archivists who have thought the most rigorously about clearing out our attics, of preserving the necessary evidence of our existence, and of representing the essence of our disciplines through appropriate models. It is the archivists who have clarified our understanding of both the best (the "hero stories") and the worst (the "horror stories") through illustrative and analytical case studies. Despite the magnitude of the transformation brought about by digital technologies, it is the archivists (and, yes, the librarians), who have made a career out of understanding, whether analog or digital, that it is all information, and there are a set of principles and practices that transcend the medium.

Closing Thoughts

So we have spent some time exploring the domain of archival studies and the changing landscape of scholarly communication, all with an eye toward the iSchools. And if we come away somewhat persuaded that the iSchools are a reasonable (if not logical) home for archival studies, do the archival studies bring a larger value proposition to the iSchools? It well may be the case that the values and vision that have developed in archival studies over the past century can inform our broader path in the 21st century. The difficult issues of digital preservation have been recognized in the iSchool community for some time, but perhaps we need to pay greater attention to related issues of selection and curation. We may find case studies buried in the archival experience to provide dramatic insight into choices yet to be made regarding digital archives. At the very least, there is

value in recognizing and appreciating the perspective and foundations of one of our niche sub-disciplines that may well become of greater significance than many would expect… perhaps even contributing to the transformation of our digital futures and (who can say), maybe even elevating the practitioners of that sub-discipline back to the status they enjoyed in the ancient world.

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