

INTRODUCTION TO PRESIDENTIAL ADDRESS

Introduction: Helen Tibbo

Jane Kenamore

When Helen asked me to introduce her, I asked for her resume. She asked me if I wanted the fifty-three-page one (actually, it's grown to sixty pages, so I don't think she counted last month's update).

Seriously, I know of no one who works harder and more effectively than Helen. She received her PhD in 1989 from the University of Maryland, and within two years, she landed her first research grant to study Boolean searching in the Cystic Fibrosis Database—a topic that sounds quite quaint in today's world, but was cutting edge back in 1991. Since those early grants, Helen has raised over \$7 million to research digital records—especially how the public uses electronic records for their own research and the best ways to preserve the records for succeeding generations.

Helen has also recognized the knowledge gap that exists between researchers like herself and practicing archivists. One of her most recent endeavors has been to cooperate with colleagues in the United Kingdom to create an interactive site, the Digital Curation Exchange, that will allow all those interested in digital curation to share information. A key component of this site will be a series of technical guides to help practitioners get started on digital preservation and curation projects.

In addition to her academic pursuits, Helen has consistently given to the profession through SAA, ALA, and other organizations. She's been most active in SAA. Since she joined in 1990, she has served on the Editorial Board, *The American Archivist* Editorial Board (for seven years), *The American Archivist* Editor Search Committee three times, in 1995, 2005, and 2011; the Publications Board, the 75th Anniversary Task Force, and as chair of the Educators Roundtable. She was elected to Council in 1997; and in 2005, she founded and organized with Nancy McGovern the Annual Research Forum, which she and Nancy continue to facilitate today.

I present to you Helen Tibbo, president of the Society of American Archivists.

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PRESIDENTIAL ADDRESS

On the Occasion of SAA's Diamond Jubilee: A Profession Coming of Age in the Digital Era

Helen R. Tibbo

It is my great pleasure and good fortune to speak with you all today and celebrate seventy-five years of service to the archival profession! Despite the several challenges that the officers, the Council, and the SAA staff have faced this year, I am still thrilled and thankful to have been your president during SAA's Diamond Jubilee. This is a significant milestone in the life of any organization, and, in a world where organizations and companies come and go in a flash, seventy-five years is indeed a long time. Then, now, WOW!

Before I begin the substance of my talk, I would like to thank the SAA staff for all it does to support the organization and the profession and for its outreach to the nation and beyond. If SAA staff members present would rise and be recognized: Nancy Beaumont, Teresa Brinati, Solveig DeSutter, Brian Doyle, Lee Gonzalez, Tom Jurczak, Amanda Look, Rene Mueller, Carlos Salgado, Jennifer Schooley, and Jeanette Spears. Thank you so much for your service to SAA and the archival profession. I certainly could not have gotten through the year without you all.

SAA is a membership organization. While there is a very hard-working staff here in the Chicago office, much of the work in service to the archival profession, the general public, the U.S. historical record, and the nation as a whole, is conducted by members. This has been a hallmark of SAA life since the beginning and speaks to how dedicated archivists are to preserving the record and to their professional lives. Please look to your left—and now your right—and realize the strength and dedication of the SAA family. We would not be here today celebrating seventy-five years of accomplishments without you and your

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predecessors. Please give yourselves and all those earlier SAA members a well-deserved round of applause.

This has been a trying year for all of us—in our personal, professional, and organizational lives. Most of us have watched our personal finances, and especially retirement investments, tumble. Many of us have seen colleagues lose their jobs; some of us have had the onerous task of telling staff members they no longer have a job; a few of us in this room, and some of the SAA family who are missing from this gathering, have lost their positions and are seeking ways to re-enter the archival workforce. The SAA family heart goes out to all of you who are facing an uncertain professional future.

Almost all archives have had their budgets, if not their staffs, cut with some institutions losing more than 50 percent of their employees in the past two to three years. Amid this turmoil has been the ongoing bad news concerning funding cuts for the National Archives and Records Administration (NARA) and the failure of Congress to pass the Preserving the American Historical Records Act, or PAHR. Let me stop and thank Kathleen Roe for leading the efforts to get PAHR passed! Her work has been valiant and exemplary! Not only is institutional and local, county, and state government funding for all manner of archives being cut, the hope of grant funding for projects is rapidly dwindling with significant cuts for the National Historical Publications and Records Commission (NHPRC) and the Institute for Museum and Library Services (IMLS). On top of these cuts, the idea of making the case for archives and the preservation of historical documents and bills such as PAHR to anyone outside the archival profession seems harder and harder by the day.

Some of you may now be rethinking the soundness of your decision to get up so early this morning to attend this talk. Where is the celebration? Where is the hope; the inspiration? Where is the glorious past? Where is the way forward? Dear archivists and friends, the past and the future are in this very moment; in this very room; and in each of us, individually and especially, collectively. We are the bridge from the profession's past to the profession's future. While this is always the case at any moment in time, I would argue that this is a very special and momentous point in the history of the archival profession—one that will stand as a turning point for decades to come and one we need to recognize and embrace. We are now coming of age in the digital era. No longer children dabbling with small sets of electronic records or wondering what is the best resolution or scanner for digitizing analog content, we are now faced with managing and preserving a flood of born-digital records as well as personal papers that arrive in our repositories in digital form. The challenges are great but the digital archiving pioneers of the past two decades have learned enough to mark and smooth the path forward. It is now time for us to take that path and take up our mantle and our responsibility to appraise, manage, preserve, and make

accessible and useful a world of digital content. It is time to take the foundations of our professional knowledge and apply them in new domains to new formats and materials. In the process, we will gain widespread relevance and recognition in society. Indeed, the term *heroic* comes to mind. But for archivists to transform the world, and maybe even save it, we need to first transform ourselves, our education, and our appreciation for digital content.

Why so much transformation? Simply put, the world in which most of us trained for our careers has changed. While there will always be archival records and manuscripts, today's, and certainly tomorrow's, versions often are and will increasingly be different in form, content, and extent as compared to records of the past. If archivists are to serve scholarship, government, commerce, and society as we have for centuries, we must now find the courage to move forward, not only learning about new technologies and acquiring new skills, but implementing them on a day-to-day basis while building trustworthy digital repositories.¹

"Digital Age," "Digital Era," and "Information Age"² often seem trite and overused, but the phenomenon is real, and many metrics show us just how much our world has changed since our fiftieth anniversary in 1986. According to Martin Hilbert and Priscila López in an article that appeared in *Science* in February of this year,³ 2002 could be considered the beginning of the digital age, the first year worldwide digital storage capacity overtook total analog capacity. Their research from UC Berkeley and the University of Madrid studied digital information growth, transmission, and storage capacity. Looking at both digital memory and analog devices, the researchers calculate that in 2007

- Humankind was able to store at least 295 exabytes of information. (Yes, that's a number with twenty zeroes in it or 10^{18}).

¹ The Consultative Committee for Space Data Systems, "Audit and Certification of Trustworthy Digital Repositories," Recommended Practice, CCSDS 652.0-M-1 (Magenta Book, September 2011), <http://public.ccsds.org/publications/archive/652x0m1.pdf>. Note: All URLs in this paper accessed 18 November 2011.

² See for example, Patricia L. Bellia, *Cyberlaw: Problems of Policy and Jurisprudence in the Information Age* (St. Paul, Minn.: Thomson/West, 2011); Kurt D. Bollacker, "Avoiding a Digital Dark Age," *American Scientist* 98 (March–April 2010): 106, <http://www.americanscientist.org/issues/pub/2010/3/avoiding-a-digital-dark-age>; Manuel Castells, *The Rise of the Network Society. The Information Age: Economy, Society, and Culture*, vol 1., 2nd ed. (New York: Wiley-Blackwell, 2011); *Digital Age* (Electronic Journal) (Fort Washington, Penn.: Cardinal Business Media, 1995-); *Information Age* (Electronic Journal) (Hamilton, N.J.: Films Media Group, 2007); Joseph Migga Kizza, *Ethical and Social Issues in the Information Age* (London: Springer, 2010.); Christopher A. Lee, ed., *I, Digital: Personal Collections in the Digital Era* (Chicago: Society of American Archivists, 2011); Nicholas Negroponte, *Being Digital* (New York: Knopf, 1995); Roy Rosenzweig, *Clio Wired: The Future of the Past in the Digital Age* (New York: Columbia University Press, 2011).

³ Martin Hilbert and Priscila López, "The World's Technological Capacity to Store, Communicate, and Compute Information," *Science*, 10 February 2011; Suzanne Wu, "How Much Information Is There in the World?," University of California, *USC News*, 10 February 2011, http://uscnews.usc.edu/science_technology/how_much_information_is_there_in_the_world.html.

- Humankind successfully sent 1.9 zettabytes (10^{21}) of information through broadcast technologies such as televisions and GPS. That's equivalent to every person in the world reading 174 newspapers every day.
- On two-way communications technology, such as cell phones, humankind shared sixty-five exabytes of information, the equivalent of every person in the world communicating the contents of six newspapers every day.⁴

According to the authors, "from 1986 to 2007, the period of time examined in the study, worldwide computing capacity grew 58 percent a year, ten times faster than the United States' GDP. Telecommunications grew 28 percent annually, and storage capacity grew 23 percent a year."⁵

As of June 2011, the EMC Corporation estimated that "the amount of information created and replicated" this year would "surpass 1.8 zettabytes (1.8 trillion gigabytes)—growing by a factor of nine in just five years."⁶ The number of "files," or containers that hold that information is growing at an even faster rate than the information itself. EMC projects that "in the next five years, these files will grow by a factor of 8, while the pool of IT staff available to manage them will grow only slightly."⁷ So, like our physical universe, the digital universe is something to behold—1.8 trillion gigabytes in 500 quadrillion "files"—and more than doubling every two years. That's nearly as many bits of information in the digital universe as stars in our physical universe.⁸

The world has changed indeed! As recently as 2000, almost three-quarters of the world's information was still in analog form.⁹ According to Hilbert and López, as of 2007, almost 94 percent of our memory was in digital form.¹⁰ Today, while many archival collections still remain largely analog, over 99 percent of contemporary information is produced digitally. What a stunning transformation of society and the way we work and communicate in a decade, and what a daunting change facing archivists!

⁴ Wu, "How Much Information Is There in the World?"

⁵ Wu, "How Much Information Is There in the World?"

⁶ John Gantz and David Reinsel, "Extracting Value from Chaos," *IDC iView*, June 2011, <http://www.emc.com/collateral/analyst-reports/idc-extracting-value-from-chaos-ar.pdf>. For the full report with multimedia content, see <http://www.emc.com/collateral/demos/microsites/emc-digital-universe-2011/index.htm>.

⁷ Gantz and Reinsel, "Extracting Value from Chaos."

⁸ Gantz and Reinsel, "Extracting Value from Chaos."

⁹ Andrea Leontiou, "Humanity's Shift from Analog to Digital Is Nearly Complete," *TechNewsDaily*, 10 February 2011, <http://www.technewsdaily.com/2052-humanitys-shift-from-analog-to-digital-nearly-complete.html>.

¹⁰ Wu, "How Much Information Is There in the World?"

A small number of archivists have been involved with machine-readable, and now digital, records for decades. According to Bruce Ambacher, the U.S. government first defined punch cards as records in the Records Disposition Act of 1939.¹¹ The description “regardless of physical form” appeared in the Records Disposal Act of 1943, later known as the Federal Records Act. In 1965, the National Archives and Records Service (NARS) assisted the Bureau of the Budget to inventory punch cards and computer tapes, and, in 1968, the Data Archives Staff was formed. In 1970, forty-one years ago, NARS accessioned its first electronic records from federal agencies.¹²

Years passed but despite the early engagement of NARS's archivists with machine-readable records, little progress was made in the profession at large in dealing with electronic records. In 1989, participants in the National Association of Government Archives and Records Administrators (NAGARA) and the University of Pittsburgh–sponsored advanced institute for government archivists, affectionately known as “Camp Pitt,” described “the archival management of electronic records” as being “probably the most important, and certainly the most complicated, issue currently before the archival profession.”¹³ In 1991, Margaret Hedstrom described then current electronic records as “electronic incunabula,” noting that they were “an evolving form of documentation” and that they presented “archivists with their greatest challenge in decades.”¹⁴ Hedstrom rightly predicted that “the shift from print to electronic communications” would “change the ways that organizations create and use information, much as the introduction of printing altered social practices, cultural conventions, institutions, economics, laws, and the politics of information.”¹⁵ Moreover, she foresaw that change would be “evolutionary, as was the case with the introduction of printing, because profound shifts in the production and dissemination of information incorporate some traditional habits and approaches for handling information, and at the same time render obsolete some skills, professions, and institutions.”¹⁶

The 1990s presented new challenges with the growth of personal computing and the management of email in unstructured office environments. John McDonald, from the National Archives of Canada, called this period “the wild

¹¹ Bruce Ambacher, ed., *Thirty Years of Electronic Records* (Lanham, Md.: Scarecrow, 2003): ix–x.

¹² Ambacher, *Thirty Years of Electronic Records*.

¹³ National Association of Government Archives and Records Administrators, *Archival Administration in the Electronic Age: An Advanced Institute for Government Archivists* (Pittsburgh, Penn.: NAGARA, 1989), iii.

¹⁴ Margaret Hedstrom, “Understanding Electronic Incunabula: A Framework for Research on Electronic Records,” *The American Archivist* 54 (Summer 1991): 335.

¹⁵ Hedstrom, “Understanding Electronic Incunabula.”

¹⁶ Hedstrom, “Understanding Electronic Incunabula.”

frontier.”¹⁷ Arguably the most important development of that decade for electronic records management and digital archiving was *Armstrong v. Executive Office of the President*, a lawsuit in 1993 against the Executive Office of the President of the United States that involved the now named National Archives and Records Administration (NARA) as a codefendant.¹⁸ This case brought email management, archiving, and the difficulties of preserving the authenticity and provenance of digital objects to the attention of not only archivists but the entire country. This case provided striking evidence of the need for better digital preservation technologies and techniques and in part led to research projects such as InterPARES¹⁹ and the development of the Electronic Records Archives (ERA)²⁰ at NARA. Sadly, email management and curation remains an open issue indicative of the complexity and extent of digital archiving challenges.

More broadly, the curation, preservation, and archiving of digital assets, whether cultural, educational, scientific, or economic, has come to be seen as a set of central challenges of the early twenty-first century.²¹ The last fifteen years have witnessed extensive progress toward robust repository models and

¹⁷ John McDonald, “Managing Records in the Modern Office: Taming the Wild Frontier,” *Archivaria* 39 (1995): 70–79.

¹⁸ *Armstrong v. Executive Office of the President*, 1 F.3d 1274 [DC Cir 1993].

¹⁹ InterPARES Project, <http://www.interpares.org/>.

²⁰ National Archives and Records Administration, “Electronic Records Archives (ERA),” <http://www.archives.gov/era/>.

²¹ NSF/LC, Workshop on Research Challenges in Digital Archiving Organizing Committee, *It's About Time: Research Challenges in Digital Archiving and Long-term Preservation: Final Report on the NSF Workshop on Research Challenges in Digital Archiving and Long-Term Preservation, April 12–13, 2002*, (Washington, D.C.: National Science Foundation and Library of Congress, 2003), http://www.digitalpreservation.gov/documents/about_time2003.pdf; DigitalPreservationEurope, *DPE Digital Preservation Research Roadmap* (2007), http://www.digitalpreservationeurope.eu/publications/dpe_research_roadmap_D72.pdf; David Giarretta and H. Weaver, eds., “Report of the Warwick Workshop, 7 and 8 November 2005: Digital Curation and Preservation: Defining the Research Agenda for the Next Decade” (2005), http://www.dcc.ac.uk/webfin_send/346; Margaret Hedstrom et al., *Invest to Save: Report and Recommendations of the NSF-DELOS Working Group on Digital Archiving and Preservation* (prepared for the National Science Foundation's Digital Library Initiative and the European Union under the Fifth Framework Programme by the Network of Excellence for Digital Libraries [DELOS], 2003) <http://eprints.erpanet.org/48/01/Digitalarchiving.pdf>; David M. Levy, “Heroic Measures: Reflections on the Possibility and Purpose of Digital Preservation,” *Proceedings of the Third ACM Conference on Digital Libraries* (Pittsburgh: 1998), 152–61; Philip Lord and Alison Macdonald, e-Science Curation Report, “Data Curation for e-Science in the UK: An Audit to Establish Requirements for Future Curation and Provision” (prepared for the JISC Committee for the Support of Research [JCSR], 2003) http://www.jisc.ac.uk/uploaded_documents/e-ScienceReportFinal.pdf#search=%22e-Science%20curation%20report%22; National Science Board, *Long-Lived Digital Data Collections Enabling Research and Education in the 21st Century* (Washington, D.C.: NSB, September 2005).

architectures,²² preservation tools and strategies,²³ collaborations and community building,²⁴ and trustworthy and sustainable digital curation.²⁵ Key projects provide a firm foundation for ongoing research and development.²⁶ This work

²² See, for example, Archivemata, "Main Page," http://archivemata.org/wiki/index.php?title=Main_Page; Consultative Committee for Space Data Systems, "Reference Model for an Open Archival Information System (OAIS) CCSDS 650.0-B-1 Blue Book," (2002), <http://public.ccsds.org/publications/archive/650x0b1.PDF>; Carl Lagoze, Sandy Payette, Edwin Shin, Chris Wilper, "Fedora: An Architecture for Complex Objects and Their Relationships," <http://arxiv.org/ftp/cs/papers/0501/0501012.pdf>; IRODS: Data Grids, Digital Libraries, Persistent Archives, and Real-time Data Systems, https://www.irods.org/index.php/IRODS:Data_Grids,_Digital_Libraries,_Persistent_Archives,_and_Real-time_Data_Systems; Ronald Jantz and Michael J. Giarlo, "Architecture and Technology for Trusted Digital Repositories," *DLib Magazine* 11 (June 2005), <http://www.dlib.org/dlib/june05/jantz/06jantz.html>; Carl Lagoze et al., "Fedora: An Architecture for Complex Objects and Their Relationships," *International Journal on Digital Libraries* 6 (April 2006); Stanford University, LOCKSS (Lots of Copies Keep Stuff Safe), <http://www.lockss.org/lockss/Home>; University of North Carolina at Chapel Hill Libraries, "Announcing the Curator's Workbench," <http://www.lib.unc.edu/blogs/cdr/index.php/2010/12/01/announcing-the-curators-workbench/>; Library of Congress Digital Preservation, "Partners," <http://www.digitalpreservation.gov/partners/recollection/index.html>.

²³ See, for example, DSpace, <http://www.dspace.org/>; DuraCloud, <http://duracloud.org/>; Mercè Crosas, "The Dataverse Network®: An Open-Source Application for Sharing, Discovering and Preserving Data," *DLib Magazine* 17 (January/February 2011), <http://dlib.org/dlib/january11/crosas/01crosas.html>.

²⁴ See, for example, DuraSpace, <http://duraspace.org/>; Fedora Commons, <http://www.fedora-commons.org/>; Library of Congress, "National Digital Stewardship Alliance," <http://www.digitalpreservation.gov/ndsa/>; Open Planets Foundation, <http://www.openplanetsfoundation.org/>; and the Alliance for Permanent Access, "Welcome to APA," <http://www.alliancepermanentaccess.org/>.

²⁵ Digital Curation Center, "What Is Digital Curation?," <http://www.dcc.ac.uk/digital-curation/what-digital-curation/>; The Center for Research Libraries and OCLC Online Computer Library Center, "Trustworthy Repositories Audit and Certification: Criteria and Checklist," version 1 (February 2007), http://www.crl.edu/sites/default/files/attachments/pages/trac_0.pdf; Digital Preservation Europe and the Digital Curation Centre, "DRAMBORA Interactive: Digital Repository Audit Method Based on Risk Assessment" (2008), <http://www.repositoryaudit.eu/>; Christopher A. Lee and Helen R. Tibbo, "Digital Curation and Trusted Repositories: Steps toward Success," *Journal of Digital Information* 8, no. 2 (2007), <http://journals.tdl.org/jodi/article/viewArticle/229/183>; Nestor (German competence network for digital preservation), "Welcome to Nestor," <http://www.langzeitarchivierung.de/eng/>.

²⁶ See, for example, Alliance for Permanent Access, "APARSEN," <http://www.alliancepermanentaccess.org/index.php/current-projects/aparsen/>. APARSEN stands for the Alliance for Permanent Access to the Records of Science in Europe, a Network of Excellence gathering digital preservation practitioners and researchers; UK Web Archive, "CAMiLEON Project," <http://www.webarchive.org.uk/ukwa/target/113954/source/alpha>; CASPAR, "Welcome to the CASPAR Preservation User Community," <http://www.casparpreserves.eu/>; UKOLN/CEDARS, Metadata, "CURL Exemplars in Digital Archives (CEDARS)," <http://www.ukoln.ac.uk/metadata/cedars/>; Data Conservancy, "What Is the Data Conservancy?," <http://dataconservancy.org>; The Data Observation Network for Earth (DataOne), <https://www.dataone.org/>; Digital Preservation Europe (DPE), "Welcome," <http://www.digitalpreservationeurope.eu/>; Geospatial Multistate Archive and Preservation Project (GeoMAPP), "About the Project," <http://www.geomapp.net/>; InterPARES Research Team, *The Long-term Preservation of Authentic Electronic Records: Findings of the InterPARES Project*, <http://www.inter pares.org/book/index.cfm>; kopal, "About kopal," <http://kopal.langzeitarchivierung.de/>; Life Cycle Information for E-Literature (LIFE), "LIFE Conference, 20 April 2006," <http://www.ucl.ac.uk/life/1/conference.shtml>; Library of Congress, "Digital Preservation," <http://digitalpreservation.gov>; Titia van der Werf-Davelaar, "Long-term Preservation of Electronic Publications: The NEDLIB Project," *DLib Magazine* 5 (September 1999), <http://www.dlib.org/dlib/september99/vanderwerf/09vanderwerf.html>; Planets, "Welcome to Planets," <http://www.planets-project.eu/>; PRESTO Preservation Technology, <http://presto.joanneum.ac.at/index.asp>; PrestoSpace, "Preservation Towards Storage and Access: Standardised Practices for Audiovisual Contents in Europe," <http://www.prestospace.org/>; SCAPE, "Scalable Preservation Environments," <http://www.scape-project.eu/>; Sustaining Heritage Access through Multivalent Archiving (SHAMAN), "Sustaining Communication with the Future," <http://shaman-ip.eu/shaman/>.

and the growing recognition that “one of the major challenges of this scientific generation [is] how to develop the new methods, management structures and technologies to manage the diversity, size, and complexity of current and future data sets and data streams,” led the National Science Foundation (NSF) in March 2007 to call for “developing a coherent data cyberinfrastructure in a complex global context” and a “national digital data framework.”²⁷ It also led to NSF’s Sustainable Digital Data Preservation and Access Network Partners (DataNet) call for proposals, which envisioned new organizations that

will integrate library and archival sciences, cyberinfrastructure, computer and information sciences, and domain science expertise to: provide reliable digital preservation, access, integration, and analysis capabilities for science and/or engineering data over a decades-long timeline; continuously anticipate and adapt to changes in technologies and in user needs and expectations; engage at the frontiers of computer and information science and cyberinfrastructure with research and development to drive the leading edge forward; and serve as component elements of an interoperable data preservation and access network.²⁸

What a place for archivists to work! However, we have much work to do if large numbers of archivists are to assume their essential roles in the NSF scenario.

In a 2003 NSF/Library of Congress report entitled *It’s about Time*, Margaret Hedstrom observed that there was “a pressing requirement for education and training in new digital archiving methods, tools, and technologies,”²⁹ and this remains the case today. Two studies published last year make clear that archival repositories still face many challenges in dealing with digital content and that the need for education in digital preservation and curation must be addressed before this situation can change. OCLC’s *Taking Our Pulse*³⁰ report surveyed special collections in ARL institutions in 2010, finding that

- Half of archival collections have no online presence;
- User demand for digitized collections remains insatiable;
- Management of born-digital archival materials is still in its infancy;

²⁷ National Science Foundation, “Sustainable Digital Data Preservation and Access Network Partners (DataNet)” (2007), http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503141.

²⁸ National Science Foundation, “Sustainable Digital Data Preservation and Access Network Partners (DataNet) Program Solicitation,” NSF 07-601 (2007), 1, <http://www.nsf.gov/pubs/2007/nsf07601/nsf07601.pdf>.

²⁹ Margaret Hedstrom in *It’s About Time*, 19.

³⁰ Jackie M. Dooley and Katherine Luce, *Taking Our Pulse: The OCLC Research Survey of Special Collections and Archives* (Dublin, Ohio: OCLC Research, 2010), <http://www.oclc.org/research/publications/library/2010/2010-11.pdf>.

- 75 percent of general library budgets have been reduced;
- The current tough economy renders “business as usual” impossible.³¹

This report cites the top three “most challenging issues” in managing special collections as being “space, born-digital materials, and digitization.”³² The report notes that

The data clearly reveal a widespread lack of basic infrastructure for collecting and managing born-digital materials: more than two thirds cited lack of funding as an impediment, while more than half noted lack of both expertise and time for planning. As a result, many institutions do not even know what they have, access and metadata are limited, only half of institutions have assigned responsibility for managing this content, few have collected more than a handful of formats, and virtually none have collected at scale.³³

Also in 2010, Lisl Zach and Marcia Peri reported on a survey of archivists and records managers at academic institutions across the United States regarding electronic records management programs.³⁴ They started this work as NHPRC-UNC Electronic Records Research Fellows with me in 2005. At that time, they found that almost no colleges or universities had electronic records programs. Replicating their study in 2010, Zach and Peri write, “Sixty-five percent (126) of the original 193 institutions updated their 2005 data, and the results suggest relatively little change in the development of ERM [electronic records management] programs over the past four years.”³⁵ There are surely many reasons for this situation including cost, but I would argue that lack of widespread, long-standing, strong graduate programs in digital archiving, electronic records management, and data curation lie at the core of the neglect of much of our nation’s digital heritage and institutional records. Additionally, reluctance on the part of many graduate archival students to take a full array of technical courses as part of their programs serves to extend this situation in time. Finally, the lack of any systematic continuing education for archivists in managing and curating digital materials has hampered working professionals in finding the lifelong education they need as the workplace and the repository evolve from analog to digital. As SAA’s “Guidelines for a Graduate Program in Archival Studies” (GPAS) states, “archivists and manuscript curators have centuries of expertise in managing and preserving paper-based records,” but “the management and long-term preservation of digital objects presents new and

³¹ Dooley and Luce, *Taking Our Pulse*, 9.

³² Dooley and Luce, *Taking Our Pulse*, 68.

³³ Dooley and Luce, *Taking Our Pulse*, 13.

³⁴ Lisl Zach and Marcia Frank Peri, “Practices for College and University Electronic Records Management (ERM) Programs: Then and Now,” *The American Archivist* 73 (Spring/Summer 2010): 105–28.

³⁵ Zach and Peri, “Practices for College and University Electronic Records Management (ERM) Programs,” 105.

complex challenges for archivists.”³⁶ It is thus “essential that archival education programs prepare their graduates to preserve today’s cultural, governmental, scientific, and personal documentary heritage, be it paper-based or digital.”³⁷

So, what is a profession to do when faced with the need for fundamentally different education at both the graduate and professional levels? I am very pleased to report that SAA took on both of these challenges during the past eighteen months with what I believe are excellent results. We tackled the issue of the lack of widespread graduate digital archiving programs by updating the “Guidelines for a Graduate Program in Archival Studies” (GPAS 2011)³⁸ and designed the Digital Archives Specialist (DAS) Curriculum and Certificate Program³⁹ in response to the profession’s continuing education needs.

Let me discuss GPAS and its significance first. GPAS is a long-standing “aspirational” document that sets before educators and their deans the parameters that the SAA Education Committee, other interested SAA stakeholder groups and individuals, and the Council hold to be important in strong archival education programs. The SAA website notes that “these guidelines are intended both to define the academic preparation needed to meet these new challenges and to identify a strong common core of archival knowledge that the diverse institutions that provide graduate archival education should all deliver.”⁴⁰ Because SAA does not accredit graduate archival educational programs (a costly venture indeed), GPAS can only provide a framework and metrics for excellence but no recognition or enforcement. That does not mean, however, that the guidelines have little or no value. As explained in GPAS, “The ultimate goal of these guidelines is to improve the quality of graduate programs in archival studies, specifically by raising the minimum expectations of students and universities.”⁴¹ Archival educators who are working to improve and extend their programs from one to two to three or more faculty members often use GPAS as ammunition with their deans and directors who are aware of the importance of meeting such profession-wide guidelines. “By establishing these

³⁶ Society of American Archivists, “Guidelines for a Graduate Program in Archival Studies,” Introduction, <http://www2.archivists.org/gpas>.

³⁷ Society of American Archivists, “Guidelines for a Graduate Program in Archival Studies,” Introduction.

³⁸ From the SAA website: “The ‘Guidelines for a Graduate Program in Archival Studies’ (GPAS) were approved by the Society of American Archivists (SAA) Council in January 2002 and revised in 2005 and 2011. GPAS replaced the ‘Guidelines for the Development of a Curriculum for a Master of Archival Studies Degree’ adopted by the Council in 1994. By means of these guidelines, the Society of American Archivists endorses the development of coherent and independent graduate programs in archival studies. SAA believes that programs of the extent and nature outlined in these guidelines are the best form of pre-appointment professional education for archivists. For this reason, these guidelines supersede prior documents on archival education issued in 1977, 1988, and 1994.”

³⁹ Society of American Archivists, “Digital Archives Specialist (DAS) Curriculum and Certificate Program,” <http://www2.archivists.org/prof-education/das>.

⁴⁰ Society of American Archivists, “Guidelines for a Graduate Program in Archival Studies,” Introduction.

⁴¹ Society of American Archivists, “Guidelines for a Graduate Program in Archival Studies,” Introduction.

basic guidelines as minimum standards for archival studies programs, SAA also hopes to encourage the continued development of more extensive and more comprehensive programs and, by doing so, to improve the archival profession by better educating its members.”⁴²

The major revisions to GPAS this past year focus on the reality that “records come in all formats and on a multitude of media”⁴³ and that, indeed, almost all records generated today are produced in some sort of digital format. It is my hope that GPAS 2011 will engender uptake of digital archiving curricula across a wide range of archiving programs.

Several graduate archival programs in North America presently have excellent course work to prepare students to enter the digital archival workforce and can serve as models in this necessary and inevitable transformation of archival education as a whole. In 2009, Kaitlin Costello found that slightly over one-third, or nine, of the iSchools taught at least one course in digital preservation and three of the twenty-six schools taught two or more courses.⁴⁴ Some of these schools offer fairly extensive digital or data curation programs and research opportunities. While the words *archives* or *archiving* may not be in the titles of all these courses or programs, they all focus on knowledge and skills that archivists who will go out and work with digital content for their entire lifetimes will need. GPAS predicts that

Graduates of such programs can anticipate careers in a variety of professional positions, from archives or records management to digital archives management or historical records preservation in institutions ranging from government or institutional archives and local historical societies and high-technology business enterprises. Graduates of archival programs are increasingly in demand for information management positions, and the value of archival knowledge continues to gain recognition in an ever-broader range of organizational settings, such as digital forensics.⁴⁵

With funding from the Institute for Museum and Library Services (IMLS), Christopher Lee and I are developing the DigCCurr digital curation curriculum at the School of Information and Library Science at the University of North Carolina at Chapel Hill. Because curricula constantly change, this will remain a work in progress. Because we both have deep archival roots, the program has a decidedly archival flavor. Of particular interest to today's talk are the curricular

⁴² Society of American Archivists, “Guidelines for a Graduate Program in Archival Studies,” Introduction.

⁴³ Society of American Archivists, “Guidelines for a Graduate Program in Archival Studies,” Introduction.

⁴⁴ Kaitlin Costello, “Digital Preservation Education in iSchools” (poster presented at iConference, 3–6 February 2010, Urbana, Ill.)

⁴⁵ Society of American Archivists, “Guidelines for a Graduate Program in Archival Studies.”

framework materials—the Matrix of Digital Knowledge and Competencies⁴⁶ and the High-Level Categories of Digital Curation Functions.⁴⁷ The knowledge and competencies matrix is a six-dimensional matrix for identifying and organizing the materials to be covered in a digital curation curriculum. It lists the following areas:

1. Mandates, Values, and Principles⁴⁸
2. Functions and Skills⁴⁹
3. Professional, Disciplinary, Institutional, Organizational, or Cultural Context⁵⁰
4. Type of Resource⁵¹
 1. Prerequisite Knowledge,⁵² and
 2. Transition Point in Information Continuum⁵³

The high-level categories of digital curation functions list areas including

1. Production of digital objects;
2. Selection, appraisal, and disposition;
3. Identifying, locating, and harvesting;
4. Transfer;
5. Ingest;
6. Data management; and
7. Description, organization, and intellectual control.

We take these dimensions and blend them into lessons, entire courses, and the DigCCurr Professional Institute. I mention these tools today as they are an example of content relevant to digital archivists that does not always explicitly refer to archives and because they influenced the SAA Digital Archives Continuing Education Task Force in its work this past year. You can find these

⁴⁶ Christopher A. Lee, “Matrix of Digital Curation Knowledge and Competencies,” version 13 (17 June 2009), <http://www.ils.unc.edu/digccurr/digccurr-matrix.html>.

⁴⁷ Christopher A. Lee, “High-Level Categories of Digital Curation Functions,” version 14 (6 September 2008), <http://www.ils.unc.edu/digccurr/digccurr-funct-categories.pdf>.

⁴⁸ Christopher A. Lee, “Mandates, Values and Principles,” version 17 (4 April 2009), <http://ils.unc.edu/digccurr/digccurr-principles.html>.

⁴⁹ Christopher A. Lee, “Functions and Skills,” version 18 (18 June 2009), <http://ils.unc.edu/digccurr/digccurr-functions.html>.

⁵⁰ Christopher A. Lee, “Professional, Disciplinary, Institutional, Organizational or Cultural Context,” version 18 (17 June 2009), <http://ils.unc.edu/digccurr/digccurr-context.html>.

⁵¹ Christopher A. Lee, “Type of Resource,” version 18 (17 June 2009), <http://ils.unc.edu/digccurr/digccurr-resource-type.html>.

⁵² Christopher A. Lee, “Prerequisite Knowledge,” version 18 (17 June 2009), <http://ils.unc.edu/digccurr/digccurr-prereq-knowledge.html>.

⁵³ Christopher A. Lee, “Transition Point in the Information Continuum,” version 18 (17 June 2009), <http://ils.unc.edu/digccurr/digccurr-transition-point.html>.

materials on the DigCCurr website,⁵⁴ and we and IMLS encourage other programs to use them.

While we can identify developing graduate-level programs for digital preservation and curation, substantive education, short of entire new graduate degrees, for in-place professionals who do not have a background in digital archiving, preservation, or curation is another matter. The report from the December 2010 Data Research Workforce Summit held in conjunction with the International Digital Curation Conference and organized by the NSF-funded Data Conservancy project notes: "While there has been considerable progress on curriculum for undergraduate and graduate students, there remains a clear and urgent need to adapt and deliver similar content for continuing professional education for the current workforce."⁵⁵ This report focuses on educating individuals who will curate scientific data, but the landscape is much the same for the digital archival workforce at large.

In the summer and fall of 2010, the Library of Congress administered the Digital Preservation Outreach and Education (DPOE) Training Needs Assessment Survey.⁵⁶ Nancy McGovern designed and distributed this survey through numerous professional listservs, including "Archives and Archivists," as well as by other means. The focus was to understand what types of continuing education concerning digital preservation working professionals from libraries, archives, and museums most needed and were most likely to attend. According to the DPOE report posted at its website,

The survey received a total of 868 responses. 40% of the respondents were [from] libraries, 34% were archives, 16% were museums, 4.5% were historical societies and 0.9% were [from] research groups. The majority of respondents (48.3%) were from academic organizations; 9.6% were from county or municipal government; 7.7% were from federal government; and 6.7% were from state government. 25.5 % responded as "Other" (many of these identified themselves as non-profit organizations).⁵⁷

Thus archivists, and particularly archivists in academic repositories, one of the largest segments of SAA membership, were well represented in this survey.

⁵⁴ DigCCURR, "About Our Projects," <http://ils.unc.edu/digccurr>.

⁵⁵ Virgil E. Varvel, Jr., Carole L. Palmer, Tiffany Chao, and Simone Sacchi, *Report from the Research Data Workforce Summit: Sponsored by the Data Conservancy*, presented during the 6th International Digital Curation Conference, 6 December 2010, Chicago (Champaign: Center for Informatics Research in Science and Scholarship, University of Illinois, 2010), 8.

⁵⁶ Library of Congress, "Digital Preservation Outreach and Education (DPOE)," <http://www.digitalpreservation.gov/education/>.

⁵⁷ Library of Congress, "Digital Preservation Outreach and Education (DPOE) Training Needs Assessment Survey: Executive Summary," <http://www.digitalpreservation.gov/education/documents/DPOENeedsAssessmentSurveyExecutiveSummary.pdf>.

Of interest, “33.2% of respondents reported having paid full-time or part-time professional practitioners conducting digital preservation activities, 21.9% reported having no staff for digital preservation, and 13.9% have volunteers working on digital preservation.”⁵⁸ Also typical of most archives, more than half of the respondents were from organizations of fewer than fifty staff members. Almost 85 percent of respondents considered digital preservation to be very important, and 82 percent had “staff of some kind assigned to digital preservation, although 48.8% are assigned duties only as needed.”⁵⁹ Overall, 32 percent of respondents ranked “technical training (to assist practitioners in understanding and applying techniques) as the type of training” most needed. Nearly 50 percent of respondents ranked small workshops focused solely on training as their first preference; 18.4 percent ranked online webinars as their top choice; and 14.4 percent ranked online self-paced courses as the type of training in which they would most likely engage.⁶⁰ From this data, the DPOE program devised a three-tier model focusing on audience as well as on content and modes of delivery.⁶¹ Executive-level education focuses on strategic support for CEOs, CIOs, and other administrators; managerial-level education is created for project and program managers; and at the practical level are courses designed for practitioners and hands-on staff.

SAA’s strategic plan identifies education for digital archiving and preservation as one of the profession’s thornier and more important issues. The strategic plan states that “Rapidly changing information technologies challenge archival principles, practices, and communication protocols, demanding effective leadership from the archives community to access, capture, and preserve records in all formats.”⁶² This “Technology” priority carries with it the following objective: “SAA will provide education and training to its members to ensure that they are aware of relevant standards and adopt appropriate practices for appraising, capturing, preserving, and providing access to electronic records.”⁶³

With the DigCCurr Digital Curation Curricular Framework and the Library of Congress’s Digital Preservation Outreach and Education audience model as well as foundational values and perspectives long found in graduate-level archival education, the SAA Digital Archives Continuing Education (DACE) Task

⁵⁸ Library of Congress, “Training Needs Assessment Survey: Executive Summary,” 1.

⁵⁹ Library of Congress, “Training Needs Assessment Survey: Executive Summary,” 1.

⁶⁰ Library of Congress, “Training Needs Assessment Survey: Executive Summary,” 2.

⁶¹ Library of Congress, Digital Preservation Outreach and Education Initiative, Pyramid (2010), <http://www.digitalpreservation.gov/education/documentsDPOENeedsAssessmentSurveyExecutiveSummary.pdf>.

⁶² Society of American Archivists, *Strategic Priority Outcomes and Activities FY 2010–FY 2014* (Chicago: SAA, 2010), 3, http://www2.archivists.org/sites/all/files/0511-StratPlan_PublicPosting_060111.pdf.

⁶³ SAA, *Strategic Priority Outcomes and Activities*, 3.

Force set out to fulfill the digital archiving continuing education mandate from the SAA Strategic Plan.

The DACE Task Force developed a two-part program: the Digital Archives Specialist or DAS Curriculum and the DAS Certificate Program.⁶⁴

The structured curriculum features four tiers of study:

- **Foundational Courses**⁶⁵ focus on the essential skills that archivists need to manage digital archives. They focus primarily, but not exclusively, on the needs of practitioners—archivists who are or will be working directly with electronic records. These courses present information that an archivist might implement in the next year.
- **Tactical and Strategic Courses**⁶⁶ focus on the skills that archivists need to make significant changes in their organizations so that they can develop a digital archives and work seriously on managing electronic records. They focus primarily, but not exclusively, on the needs of managers—those archivists who manage other professionals and who oversee programmatic operations. These courses present information that an archivist might implement in the next five years.
- **Tools and Services Courses**⁶⁷ focus on specific tools and services that archivists need to use for their work with digital archives. They are practical courses focused on specific software products and other tools, and they focus primarily, but not exclusively, on the needs of practitioner archivists. These courses present information that an archivist could implement immediately.
- **Transformational Courses**⁶⁸ focus on the skills that archivists need to change their working lives dramatically and transform their institutions into full-fledged digital archives. They focus primarily, but not exclusively, on the needs of administrators—those archivists with oversight over the entire archival enterprise of an institution. These courses present information that an archivist might implement over the course of the next ten years.

Some current SAA workshops and Web seminars are right on target with the new curriculum and will be folded into it; others will be “tweaked,” and

⁶⁴ Society of American Archivists, “Digital Archives Specialist (DAS) Curriculum and Certificate Program,” <http://www2.archivists.org/prof-education/das>.

⁶⁵ Society of American Archivists, “Foundational Courses,” <http://www2.archivists.org/prof-education/das/audience/foundational-courses>.

⁶⁶ Society of American Archivists, “Tactical and Strategic Courses,” <http://www2.archivists.org/prof-education/das/audience/Tactical-Strategic-courses>.

⁶⁷ Society of American Archivists, “Tools and Services Courses,” <http://www2.archivists.org/prof-education/das/audience/Tools-Services-courses>.

⁶⁸ Society of American Archivists, “Transformational Courses,” <http://www2.archivists.org/prof-education/das/audience/Transformational-courses>.

twelve newly developed courses will complete the curriculum for the present. It will be, as all curricula are, a work in progress with new courses added as needed.

Each course in the DAS Curriculum is developed with one or more key audiences in mind:

- **The Archivist Practitioner** is a hands-on, frontline archivist who manages or will manage electronic records personally.
- **The Archivist Manager** is an archivist who has oversight over the work of other professional archivists and who may or may not manage electronic records directly.
- **The Archivist Administrator** is an archivist who works in a large archives, who oversees archivist managers, who is responsible for organizational planning, and who does not manage electronic records directly but must ensure the organization's capacity to do so.

Of course, in many a repository these three roles may be embodied in one person!

Participants who complete a specified number of requirements will earn a Digital Archives Specialist (DAS) certificate. The DAS certificate requires evidence that students have knowledge of technical standards and of core archival activities as they relate to digital archives. The SAA website has details about the certificate program and the courses in each tier.⁶⁹ The DAS courses are designed for archives professionals who wish to update their technology skills and the knowledge required to manage and curate born-digital records. They are intended to supplement rather than compete with today's technology-infused graduate archival education. The individual courses range from half a day to two days long and are delivered face-to-face around the country or via webinars to accommodate archivists' busy schedules.

Built on the foundation of archival principles, the DAS Program will evolve as new technologies emerge and repositories change. I believe that it will help propel the archives community forward for years to come.

In conclusion, today's communications are massively digital and have been since at least 1995. Contemporary government and corporate records are all born digital, and, increasingly, manuscript collections contain significant digital components, yet a relatively small percentage of archivists and repositories are presently equipped to manage electronic records and to create trustworthy digital repositories. Fortunately, the number of educational opportunities in the management and curation of digital content is growing, both at the graduate and professional levels, and SAA is launching a full-scale effort in this regard. Just one more element is necessary if today's records and memory materials are

⁶⁹ Society of American Archivists, "Digital Archives Specialist (DAS) Curriculum and Certificate Program," <http://www2.archivists.org/prof-education/das>.

to be saved for tomorrow—a profession that embraces the care and stewardship of digital content.

Before I close I would like to leave you all with four challenges that focus on education planning for the digital repository, securing support, and just making it work.

1. Wherever you are on the digital curation landscape, do something significant before next year's SAA conference to advance your skills and knowledge. This might be taking a full graduate course in digital preservation or a series of SAA workshops that can lead to a DAS certificate. If you are currently a student member, it might be seeking an internship in a digital repository. If you are already an expert, we are relying on you to conduct critical research and share your knowledge and findings at conferences and in the literature. Wherever you are, continue to learn, research, and give back to the archival community.
2. Once you have some training under your belt, design your digital repository or how you are going to participate in some sort of digital consortium. I know this sounds daunting, but you just need to start and the best place to start is with some sound planning. Survey potential collections for digital content and prepare to bring that material into your repository or the consortial repository and preserve it. If you are a university archivist, this would mean surveying those electronic records created each and every day on your campus and preparing for ingest and trustworthy work flows that ensure the longevity of the materials. If you are a manuscript curator, interview potential donors regarding the content and format of their collections. You can't make an argument to your resource allocators to preserve this material if you don't know what it is, how to get it into your repository, or what steps are required to preserve it.
3. With knowledge, skills, and a plan to support your stakeholders, go get funding support. Yes, this is hard, and especially so right now, but just keep at it. Start small but have a growth plan and build on success.
4. Finally, just take some steps and do something to preserve digital content important to your collection and your users. Rome was not built in a day but stone by stone and brick by brick. If nothing else, share your knowledge of digital preservation with your content creators so they produce more durable digital objects that stand a better chance to be around twenty years from now. To quote Nike, "Just do it." To quote the Library of Congress's National Digital Stewardship Alliance, "Make it work."

We have so much to learn, so much to offer, and so much to gain as we come of age in the digital era. What we all do in the next five to ten years will be

critical for the future of our profession and for the future of electronic records and cultural materials. It is time we made sure that digital preservation systems are built on long-standing archival principles. This is in your hands and your hearts.

Again, I want to thank everyone for a wonderful year. God willing I will join you all for the 100th Anniversary in 2036, and archivists will have a much exalted status in the digital landscape.