DOI 10.1515/pdtc-2014-1001 — PDT&C 2014; 43(1-2); 2-8 DE GRUYTER

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At the Nexus of Analog and Digital: Introduction to Papers from a Symposium of Preservation Educators

Abstract: In June 2011, the University of Michigan School of Information in Ann Arbor hosted a symposium on preservation education. This special double issue of *Preservation, Digital Technology, & Culture* presents the four plenary addresses and the associated formal commentaries from the invitational symposium that brought together full-time academic faculty who have a significant research and teaching commitment to preservation and doctoral students who are developing dissertations related to preservation issues. The symposium explored how to teach preservation in ways that acknowledge the heritage of analog preservation techniques and perspectives while pointing toward research and development initiatives in the digital sphere. The four plenary sessions explored debates over the definition of the preservation field (Michèle Cloonan); challenges and opportunities of education for audiovisual preservation (Caroline Frick); concrete mechanisms to integrate research and teaching into digital preservation (Elizabeth Yakel); and the agenda for high-impact research in the university (Anne Gilliland).

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Preserving a culture's heritage has been for a century or more, at its core, a profound process of generational knowledge transfer. One group of stewards learns from committed experts, adapts preservation practices to new conditions, manages material risks, and then hands valuable physical and intellectual resources to another generation of curators, along with knowledge gained through experience. The process has always been messy and fraught with uncertainties, but never fully capable of preserving everything of value or achieving uniform practice. It is in the context of the long term that research and practice are inextricably linked through the formal and informal mechanisms of education, even if the notion of a "generation" is open to wide interpretation (Gilleard 373).

In the cultural heritage sector of libraries, archives, and museums, the ongoing transition from analog to digital technologies as source, medium, and technique has accelerated the pace of the knowledge required for one to be an effective preservationist, and it has complicated the transfer of knowledge from experts to students. Questions abound about what to call and how to define the perspectives, processes, and technologies that converge to keep digital content alive and accessible into the future. Each of the the umbrella concepts—"digital preservation," "digital archiving," "digital curation," and "digital stewardship"—suggests a conceptual breadth, and influences the shape of curriculum development and continuing education programs. In graduate education, the long-time hobbyhorse of theory versus practice is being replaced by arguments on the appropriate locus of preservation research (in the field, the academy, the corporate lab) and the relevance of experiential learning and technical training as a foundation to effective resource management. Additionally, the communities of scholars that are leading the development of preservation education are wrestling with the sheer volume and variety of analog resources, particularly sound, video, and motion pictures, whose preservation turns on digital transformation according to not-fully-settled standards.

This special double issue of *Preservation, Digital Technologies & Culture* presents plenary addresses and commentaries presented at an invitational symposium on preservation education that brought together full-time academic faculty who have a significant research and teaching commitment to preservation, along with doctoral students whose dissertations are on preservation issues, broadly defined. Three key premises motivating the symposium were that: a) much progress has been made on defining curriculum issues for digital preservation/curation and traditional preservation; b) the various perspectives of full-time faculty and doctoral students have not featured prominently enough in past conferences and symposia on preservation education; and c) the intense efforts to specify educational requirements for digital preservation may have come at the expense of a more balanced view of the relationship of analog and

digital preservation, particularly in the area of audiovisual resources. The need for fresh thinking about formal graduate-level preservation education requires a broad consideration of how digitization and other transformative processes relate to long-term digital preservation (Yakel).

Background and Context

In the heyday of preservation administration—well before the digital content revolution, browser-based access, and the requirement to preserve digital information—Pamela Darling surveyed the road ahead and found an educational challenge. "The major obstacle to the development and administration of preservation programs is the shortage, not of money, as many suppose, but of knowledge," wrote Darling. "Financial constraints are serious and will become more so; but until the preservation field reaches the point at which most people know what ought to be done and how it should be done, the lack of money to do it on a scale appropriate to the need is not terribly significant" (Darling 185). Over the same three-decade period, a revolution in digital information has doubled the preservation challenge, which now requires technologically complex approaches to digital preservation and a simultaneous commitment to protecting analog sources. Similarly, the landscape of educational opportunity has grown and shifted from its foundation in conservation and continuing education to preservation, curation, and stewardship through graduate-level credentialing. Today, Darling's expressed need for attention to "how it should be done" remains a pressing unmet need for preservation education.

Though subtle and relatively slow moving, the transition in educational needs for preservation has been marked by a sequence of conferences and symposia designed to assess preservation education needs and prepare agendas for meeting those needs. From the start, these educational explorations have included archivists and librarians in the conversation. The seminal report of 1978 by the Study Committee on Libraries and Archives of the National Conservation Advisory Council called for collaboration across the professions to advance the educational requirements for meeting the preservation challenge. Written in the pre-digital era, the report highlighted educational areas that remain relevant today. "The training of [preservation] administrators, who must be equipped to deal with organizational, administrative, and bibliographic control matters and at the same time administer the technical and craft aspects of an institution's [preservation] program, may become a specialty within library science or archives management requiring intensive courses" (NCAC 10).

Threats in the late 1980s to the future of Columbia University's graduate program in conservation and preservation prompted several major efforts to articulate the significance of graduate-level preservation education. Notable among these initiatives was a conference at Catholic University in 1990, sponsored by the Commission on Preservation and Access (now absorbed into the Council on Library and Information Resources). In considering the teacher base for preservation education, the conference noted the absence of practical experience in new preservation educators. "The faculty for preservation is changing from practitioners (who lack the time, above their full-time jobs, to meet the demand for classroom instruction) to professional teachers who have no personal experience in preservation or conservation work." The conference called for measures "to ensure that opportunities are available through which the emerging teachers of preservation can make up their deficiencies at least minimally" (Marcum, "Final Report" 118).

Though the concept of preservation underlies archival practice, archivists and the archival profession began considering preservation issues most directly beginning in the late 1980s, in part due to the impetus provided by the National Endowment for the Humanities for preservation education and training. I advanced the definition of archival preservation through my doctoral work (Conway 48). Hilary Kaplan and Brenda Banks highlighted the natural affinity between archivists and preservation issues. "It is ironic that archivists have watched librarians capture the 'preservation spotlight.' It makes good sense for archivists to take a leadership role in preservation, because of the need to preserve unique materials, and because preservation is, after all, an expressly stated part of the archival mission" (Kaplan 269). Michèle Cloonan studied preservation education in library and information science schools and found significant growth but warning signs of possible future decline (Cloonan 1991).

With external funding in 2003-04, Simmons College undertook an in-depth investigation of the future needs for archives and library preservation education. An invitational symposium at Simmons included my keynote speech, a presentation by Jeannette Bastian and Elizabeth Yakel on their archival education studies, and a preliminary report by Karen F. Gracy and Jean Ann Croft on the first phase of their comprehensive survey of preservation education in the academic and continuing education arenas. (Their subsequent findings were published in two issues of *Library Resources & Technical Services* ([Gracy

& Croft 2006, 2007]). They identified 18 full-time tenure-track faculty and five full-time non-tenure-track faculty teaching preservation in 2003. The study also found that 23 of 32 respondents (71.8%) to the survey who teach in academic environments hold a Ph.D. This is a healthy proportion and a significant level of scholarly credentialing. When looking at the limits on expanding preservation education, Gracy and Croft found that most respondents cited either resource constraints or the opinion that the issues were covered well enough in existing curricula. One of the outcomes of the Simmons College initiative was a model curriculum for preservation educators, prepared and supported by the Northeast Document Conservation Center with funding from the Institute of Museum and Library Services. Wendy Duff and her colleagues explored learning outcomes and the effectiveness of workshop training, finding much room for improvement in the ongoing impact of continuing education in the workplace (Duff 197). The major limitation of various continuing-education curriculum models, perhaps, is the lack of "ownership" by the faculty who teach the courses.

In the academic environment and the continuing-education sector, the availability of a sufficient number of qualified instructors with the motivation and the support to teach advanced archival and preservation topics is a major concern. "In the area of graduate education, the most dramatic finding in the [2004] A*CENSUS survey is the scarcity of full-time archival educators at a time when the demand for graduate education is rapidly escalating and the primacy of a master's degree is becoming widely recognized" (Yakel and Bastian 360). An increase in the commitment of full-time faculty turns in part on the recruitment and training of a committed cadre of doctoral students who pursue theoretically grounded research in some combination of digital and analog preservation, and then make a career commitment to higher education.

With the maturing of research and practice in the digital preservation environment in the past decade, attention has turned to the educational requirements for managing or creating born-digital content. Initiatives at the University of North Carolina at Chapel Hill are developing a model curriculum focused explicitly on "digital curation" as the most useful concept to encompass the entire life cycle of digital information (Pomerantz 2009). At Simmons College, a new Digital Stewardship Certificate program is built around the continuities between the preservation of analog and digital resources (Bastian 610). The University of Michigan School of Information has developed a preservation education program that turns on the integration of classroom and field internship experiences (Yakel, Conway, Krause).

In mid-2008, the Library of Congress hosted a conference on preservation education. The invitational symposium included a mix of some 80 academics and practitioners and mirrored the divided perspective among practicing conservators and professional educators that prevailed eighteen years earlier. The conference started with the premise of a renewed commitment to analog resource preservation, particularly training in item-level conservation, and it ended with a strong endorsement of expanded attention to born-digital resources, audio-visual resources on a variety of media, and the essential value of a laboratory-based curriculum. Among the major conclusions regarding faculty and teaching were a call for an increase in the number of full-time faculty that integrate research and teaching, the recruitment of a cadre of doctoral students committed to research in digital environments and materials science, and a laboratory-oriented curriculum in which media and machinery interact with prospective preservation leaders (van der Reyden). At the Library of Congress conference in 2008, the potential demise of the independent preservation and conservation program at the University of Texas at Austin fostered soul searching among the participants, just as the imminent closure of Columbia's preservation education program cast a pall over the Commission on Preservation and Access conference in 1990 (Marcum "Preservation Education" 118).

Symposium Concept and Structure

The University of Michigan symposium on preservation education explored how to teach preservation in ways that acknowledge the heritage of analog preservation techniques and perspectives while pointing toward research and development initiatives in the digital sphere. A principal premise of the symposium was that the future of preservation education turns on shifting the emphasis of graduate professional education toward preserving digital information, some of which is derived from and provides direct reference to original analog sources. A focus on digital information also parallels attention in the cultural heritage community to the changing nature of preservation activities in an increasingly digital world. In this way the University of Michigan symposium picked up where the 2008 Library of Congress symposium left off, while focusing on the perspectives of present and future educators.

The specific goal of the symposium in Ann Arbor was to create an opportunity for educators who have full-time

faculty appointments in universities and who devote a significant portion of their research and teaching to preservation issues to interact with doctoral students whose research interests are in analog preservation and digital preservation. An important auxiliary agenda for the symposium was to advance discussion among academic peers on the prospects for upper-level graduate education (doctoral) that does not require a high level of administrative coordination for implementation. Because faculty are by tradition relatively autonomous in their school, the symposium planners hoped to foster a shared sense of the value that might be achieved when faculty work with common pace and purpose.

The two-day symposium in June 2011 at the University of Michigan School of Information was attended by 15 tenured or tenure-track faculty, 19 full-time doctoral students, and two practitioners who are deeply engaged in professional preservation education. Due to limited resources, the pool of invitees was limited to faculty and doctoral students in the United States and Canada.

To seed the two-day symposium with ideas, four prominent and experienced faculty scholars wrote a paper on one of the four themes of the symposium. Each paper anchored one plenary session. These authors also led the discussion in their own plenary session. The plenary papers were not intended to be comprehensive reviews, but rather to highlight the most salient developments in the theme area, summarize the state of affairs at the time of the symposium, and propose a set of talking points for discussion at the symposium, including suggestions for action items or unresolved tensions and dilemmas for engagement by faculty and doctoral students.

The individual plenary talks were catalysts for panel discussions and in-depth conversations among the participants. Each of the 36 participants who accepted the invitation prepared and shared in advance a brief position paper on one of the themes of the symposium, drawing on personal and professional priorities and activities in their respective academic environments. A symposium planning committee reviewed the advance position papers and formed commentary panels of faculty and doctoral students for each of the four symposium themes. The panels engaged the discussion papers for each symposium theme and explored some of the nuances of the issues presented by the plenary session leader. In discussions at each plenary session, all symposium attendees contributed to the proceedings by identifying important points of consensus and convergence.

This Special Double Issue

In this issue are the discussion papers and the associated written commentaries for each of the four plenary sessions of the symposium. The authors revised and extended their contributions after the June 2011 symposium, with guidance and recommendations from the symposium organizers. The papers published here represent a close approximation of the ideas presented and discussed. Any given contribution does not necessarily reflect events occurring after the symposium. The symposium contributions were developed in the context of a gathering of scholar-experts in an environment in which much knowledge and experience was assumed. As a result, some of the papers may lack the thorough documentation that is a common feature of peer-reviewed academic writing.

Digital Preservation/Curation/ Stewardship: Too Diffuse or Adequately Diverse?

Faculty in iSchools and other university departments are developing educational programs at the master's and doctoral levels under a variety of terminologies. The first plenary session posed a number of questions for discussion regarding the extent to which conceptual variety helps or hinders the preservation field. What are the common threads in broad definitions and how important are the differences among them? Would an effort to find a single definition be worthwhile from the perspectives of faculty and doctoral students? Are the nuances of program distinction useful or confusing in efforts to build, market, and sustain mature preservation education programs?

In her plenary address, preservation pioneer Michèle Cloonan summarizes the history of preservation and the history of education for preservation by way of setting the context for an ongoing debate over the best way to describe the cultural heritage community's first responsibility to preserve. Writes Cloonan, "the teaching of preservation in this country began with a sole focus on the mechanics of it. Since then the field has evolved to encompass the social, ethical, political, legal, comparative, and cultural aspects of *if, when, what,* and *how* to preserve." In showing how the concepts of "preservation," "digital curation," and "stewardship" resonate in various communities of practice and research, she asks if it is too late to settle on a single term, concluding that ultimately the choice is best

left to the students in whose hands we will place the tools and the capacity to preserve.

Commentator Priscilla Caplan, writing from her perspective as a leading digital preservation repository developer, says that definitions matter. She adds nuance and clarity to the conversation. She concludes that the test of the relevance of any concept is its application in the lab of practice. Doctoral student Kathleen Fear comments on the particular value of all three major terms. She highlights the important conclusion that preservation concepts may resonate variously with different communities of practice. In the wider discussion of the plenary session, symposium participants concluded that the preservation field was broad enough to accommodate complementary definitions and that efforts to craft educational programs under a single conceptual idea would not bear fruit.

Enhanced Training in Audiovisual Resources

It is becoming increasingly apparent that the preservation of endangered audiovisual resources (sound recordings, videotape, motion pictures) is the "brittle books" crisis of the 21st century. The second plenary session began with the premise that the scale of the preservation effort required and the risk of catastrophic loss are emerging as grand challenges. As standards settle in some areas but are only emerging in others, how should preservation programs position themselves to prepare preservation professionals in this area? What is the role of laboratory-based training for audiovisual preservation? What sorts of partnerships with commercial service bureaus that specialize in digital conversion and media preservation are appropriate? What are some of the most pressing research questions regarding audiovisual preservation that could engage faculty interests?

In her position paper, film preservation scholar Caroline Frick describes how specialized education and training for audiovisual preservation has emerged as a separate sphere beyond the sight and influence of the information school community. She points to the dominance of "media" as the organizing principal of most educational programs, rather than a cross-cutting emphasis on information content. Frick contends that "for audiovisual preservation education, the separate-but-equal system of segregation must and should be challenged." Such a position challenges preservation educators to broaden their perspectives on the breadth of the preservation mandate in the 21st century.

In her commentary, film preservation scholar Karen Gracy amplifies the key points in Frick's plenary address and adds further detail about the challenges of sustaining film preservation education programs that are separate, small, lab-based, and tied to the priorities of the commercial media sector. Her strongest recommendation concerns the educational value of emphasizing the context of information content, in addition to the current focus on digital reformatting standards. Howard Besser, another pioneer in preservation education, agrees with the general thrust of the plenary address that boutique, specialized audiovisual preservation education programs may not be sustainable. Yet Besser highlights the film preservation program at New York University as robust because of its focus on the digital as a broad framework within which to consider the long-term needs of audiovisual heritage. Doctoral student Snowden Becker adds a counterpoint to both commentaries by claiming that preservation education needs to look beyond the mainstream to encompass ephemeral, marginalized, and amateur media productions that are born, thrive, and may perish outside the grasp of the cultural heritage community. The plenary address, commentaries, and symposium discussion create a compelling argument for broadening preservation education programs to encompass audiovisual resources.

Integrating Research and Teaching by Full-time Faculty

As full-time faculty, preservation educators have active research agendas, teach a full load of courses (not all of them on preservation topics), and serve professional and scholarly communities in various capacities. The third plenary session explored the balance between the sometimes competing responsibilities of the academy. What is the scope of research and teaching by faculty in the preservation arena? How can we integrate these areas? What are the networks of expertise and how should they be strengthened, to support the work of faculty?

Archives scholar Beth Yakel tackles the relationship between research and teaching in the context of formal professional education. Rather than rehash the ongoing debate between theory versus practice in professional education, Yakel presents a case study on technology-enhanced training that opens the symposium to questions

of evaluation of student learning styles, pedagogical approaches, and actual student learning in the context of preservation education. Through this approach, Yakel demonstrates by example how research on the preservation education enterprise can inform and influence the educational experience of students.

In her commentary, archives scholar Patricia Galloway endorses integrating preservation research and preservation teaching. But she points out that a deep grounding in the nature of digital information is an important prerequisite to student learning. Galloway concludes that "active engagement with the digital 'wild' needs to be a fundamental part of students' work, but it also means that they need to develop a more serious and critical acquaintanceship with what digital objects are." Assistant professor Stacy Kowalczyk takes this conclusion even further in her emphasis on the practical challenges posed by scientific data, including "how to deal with the vast quantity of data being produced in the sciences; how to make this data available to many researchers; how to preserve this data for posterity." Associate professor Cal Lee, drawing on his experience with the DigCCurr curriculum development program at the University of North Carolina and his own teaching experience, largely agrees with and reinforces Yakel's key insights about experiential learning and evaluation. He takes issue with the notion that digital preservation is a "nebulous" undertaking because digital information is intangible. Instead, Lee points to how airline pilots are trained to "fly blind" with the aid of instruments as an apt metaphor and even an appropriate strategy for preservation education.

Fostering High-Impact Research

Research in digital preservation/curation/stewardship issues is widely diversified along a continuum ranging from theory-based investigations in the academy to practice-based experimentation in organizational settings. The fourth plenary session encompassed how academic research efforts in the United States and Canada in iSchools may engage and coordinate with preservation research in the field. Through an examination of research agendas, national and international funding initiatives, and critically salient innovation, the discussion explored opportunities for doctoral student research projects and faculty collaboration with digital preservation initiatives.

Professor Anne Gilliland, who established the Archival Education and Research Institutes (AERI), explores the terms and conditions required for momentum and solidification of research in preservation. Drawing inspiration from a decade-old report from the Getty Conservation Institute and a more recent UK study on heritage science, she adapts these comprehensive conservation research agendas to the digital preservation context. Gilliland calls for research that addresses the needs and engages the research skills of an expanding range of stakeholders and community interests. She concludes with a plea for wider relevance of preservation research, suggesting that "for this research to be robust, however, academic scholarship needs to play a more systematic role, and that necessitates considerably extending the presence of preservation research and education within the academy."

In his commentary, doctoral student Adam Jansen focuses on defining what "high-impact research" means and the potential of interdisciplinary partnerships between academics and practitioners. Jansen emphasizes the need for immediacy and explicit outcomes, writing that "research must result in a positive near-term effect on the actual preservation of digital heritage objects." Associate professor Jerry McDonough anchored the final plenary session with a compelling critique of Gilliland's concept of "transdisciplinarity," stating that, in theory, the ability to work across intellectual, technical, and administrative boundaries is not only important, but mandatory. But in reality, McDonough says, a close examination of research agendas in digital preservation and digital curation exposes deep structural problems in the academy. McDonough's conclusion, which could apply equally to all aspects of the symposium, challenges educators to take a holistic view of the training of preservation researchers. "It is time to accept that we need a new type of researcher, one with specialist knowledge acquired in graduate study, but with a thorough and deep interdisciplinary understanding of the world acquired in undergraduate study, as well as training in how to work successfully with those in other disciplines in pursuit of knowledge."

Acknowledgements

The symposium was made possible with generous funding from the Institute for Museum and Library Services as an extension of an ongoing grant to the University of Michigan School of Information. Thanks go to Elizabeth Yakel for supporting the development of the symposium, Michèle Cloonan and anonymous reviewers for refereeing the papers for publication, and Madeline Sheldon for her editorial assistance.

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