GETTING A HANDLE ON DIGITAL CURATION:

EDUCATION, PRACTICE, AND IDENTITY

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It seems the term "curation" is being used everywhere these days and is applied to almost any activity that entails doing something carefully. In fact, the word is derived from the Latin *curare*, meaning "to take care." Some terms that characterize the role of curators (at least according to Wikipedia) include:

- Manager or overseer
- Keeper or guardian (of museum collections; of biological specimens; of children [in Scotland]; of cricket grounds [in Australia and New Zealand])
- Interpreter
- Selecter [in archival terms, an "appraiser" who decides what to keep based on likely future research value][i]

So there is a pattern here, although the particular uses are sometimes surprising. But then, what is "digital curation"? According to the current definition from the Digital Curation Centre (DCC) in the UK, digital curation "involves maintaining, preserving and adding value to digital research data throughout its lifecycle;" it "enhances the long-term

value of existing data by making it available for further high quality research."[ii] In other words, it means *taking care* of digital assets judged to have value for research. (I note that the DCC has added the term "research" to its original definition, and I will come back to that later.)

The key concept is that digital curation deals with the entire *life cycle* of a digital asset, from conceptualization--even before creation—to management, preservation, use (including presentation), and some future but currently unknown use. It presumes that someone is going to want to use this data again, at some point in the future when the people with present knowledge of it are no longer available. In other words: the digital life cycle is potentially much longer than the human life cycle.

Preservation planning needs to happen at the beginning of the life cycle so that *careful* decisions can be made about potential future use. Preservation is meaningless without the potential for future use, and the term digital curation somehow conveys the sense that digital assets must be managed actively over their entire life cycle in a way that "digital preservation" or even "digital stewardship" does not. I want to also mention here that one sometimes hears the term "data curation" instead of "digital curation." Technically, there's a difference, since not all data is digital, and not everything that's digital necessarily qualifies as data. I generally use "digital curation" because I think people understand it as a broader term that includes *their* stuff. However, I also believe that most if not all digital museum assets with long-term value are "data," in the sense that they are evidence useful for research. So I often use the terms interchangeably. Don't let anyone tell you that museums don't have data!

There are many people working in museums, libraries and archives today who are already directly involved in digital curation—maybe without even knowing it. Museums are creating and acquiring vast quantities of digital assets with long-term value. In the early days of digitization, we wanted to make sure that no one thought digitization equaled preservation , so we emphasized that digitization was only a means of providing access to images of physical objects, for temporary use on websites for promotional purposes or for online exhibits, for example. But now many museums are making very large investments in digitization to create the robust web sites that the public has come to expect. They are also acquiring born-digital works of art, creating research data (which I would strongly argue includes collection documentation), and converting fragile formats such as sound recordings on unstable media to digital form as part of a preservation strategy. We need ways to manage all of these digital assets, carefully consider their potential future use, and preserve them for as long as they are needed. Even if all these assets could be easily re-created—which they usually can't—the cost of re-digitization is likely to be high and would compete with other high priority activities that consume time and money. Moreover, the underlying object or data may no longer exist, or perhaps never existed in anything but digital form.

So there's a big challenge here, and it's compounded by the fact that most of the cultural heritage professionals working in the digital space today acquired their knowledge on the job. There were no formal programs to educate them, very few mentors, and no curriculum because there was no established body of knowledge or consensus on what should be taught. The practitioners were the pioneers who not only learned on the job but invented their own jobs.

In the past few years, this situation has changed rather dramatically with regard to library professional education and archival education, at least in the US. Most graduate schools of library and information science (LIS) have introduced tracks for digital libraries or digital archives, and many have also created post-master's programs, generally post-masters' certificates of advanced study, in digital curation. (Note that archival science in the US is typically incorporated into library and information science rather than being a separate master's degree.) New professionals coming out of LIS programs can take courses related to digital curation as part of the master's degree. Practicing librarians and archivists who have been out of school for a few years and now want some formal education in digital curation can go back and get a post-masters' certificate of advanced study online from one of a number of LIS schools..

LIS schools typically offer courses in digital libraries; digital preservation or archiving; and often a course called foundations of digital curation, which addresses many of the decisions that need to be made early in the digital life cycle, such as choices of formats and metadata schemas, to help ensure the longevity of digital assets. From there, students can branch into a disciplinary focus—usually scientific data or digital humanities—or take a more archival path that emphasizes the life-cycle process. The approach really depends on the particular graduate program and reflects the backgrounds of the faculty.

The accepted credential for librarians in most academic libraries and the majority of medium–to-large public libraries in the US is a master's degree (MLS) from one of the 50 US graduate schools of library and information science currently accredited by the American Library Association, plus another eight in Canada.[iii] While PhD's are helpful,

they are not required for career advancement, so a post-master's certificate in digital curation fills a gap in terms of additional knowledge and credentials that many practicing librarians and archivists feel they need. In the US, universities are rushing to create online programs in the conviction that it is the future of higher education, and LIS schools have been eager to develop online master's and post-master's certificate programs (though mostly not MOOCs, or Massive Open Online Courses) .[iv] In the UK also, there are now a number of distance education programs focusing on digital curation and related topics, and at least two in Continental Europe, both in Sweden.[v]

But, as you know, the picture for museums is more complicated. There is no single common career path. Disciplinary expertise, especially the PhD, is important for curatorial positions. Collections managers may start with a master's in museum studies and then specialize by type of museum on the job. Or it may work the other way around: an individual may start by working in a museum, maybe with a bachelor's or master's degree in a relevant discipline, and then realize that they want a more conceptual basis for understanding museum practice. Digital expertise has been acquired almost exclusively on the job, although many senior museum professionals have told us they would prefer to hire museum professionals with these skills but instead hire librarians and archivists because they can't find people with both the relevant digital expertise *and* museum experience .

For all of these reasons, the MA in Museum Studies program at Johns Hopkins University (JHU) launched a Digital Curation Certificate program earlier this year.[vi] We believe it's time to transition from on-the-job training in museum digital curation to formal preparation, so that new and current museum professionals can acquire higher-level

conceptual expertise in the management of digital assets and digital collections. And there is now a body of knowledge about digital (or data) curation, coming originally from the sciences but which now has been adopted and formalized by educators in schools of library and information science—and we believe this curriculum is also applicable for museum professional education.

The JHU MA in Museum Studies program provides a good foundation for the post-graduate digital curation certificate because of its strong technology focus and because it's also mostly online.[vii] Since its creation in 2008, the museum studies program has produced over 300 graduates from all over the US and a number of other countries. It requires nine online courses and one on-ground two-week seminar. The seminar is offered each year in Washington, DC, most years in London, and has been conducted in Barcelona and Berlin as well as other venues in the United States including New York, Chicago, and San Diego. All of these have been fully subscribed and highly successful. While many students already have jobs in museums when they start the master's program, a recent survey of graduates revealed that 84% believe the program has helped them advance in their careers and has created important networking opportunities through connections with faculty—many of whom are leading practitioners in the field—and contacts with fellow students through class interaction, meet-ups at professional conferences, and the on-site seminars. Classes are small, generally limited to 15-17 students, to promote class participation and lively discourse in asynchronous online discussion forums.

I began teaching in the museum studies program in 2011, starting with an elective course in digital preservation, and later adding a course on foundations of digital

curation. These two electives, along with a new one on managing digital information in museums, are now core courses required for the Graduate Certificate in Digital Curation. We have four instructors, including myself. These courses are based on archival principles and common digital curation tools that are covered in similar courses in LIS schools, including:

- The digital life cycle
- The Open Archival Information System (OAIS) Reference Model
- The Trustworthy Digital Repositories Audit and Certification Checklist
- PREMIS (Preservation Metadata Implementation Strategies)

The difference between our program and LIS courses is that we draw on museum examples whenever possible to demonstrate why museums need to embrace the principles of digital curation, and we emphasize how leading museums are already doing this. We think it's essential for museum professionals to be able to converse with their library and archives colleagues who are also actively involved in curating digital assets so that they can represent museum needs in collaborative resources like Europeana and the Digital Public Library of America, and can contribute to the development of digital curation tools, standards and best practices. We also want to ensure that museum data is recognized by funding bodies and government decision makers as valuable research data, along with other research data.

The six courses required for the digital curation certificate are:

- Digital Preservation
- Foundations of Digital Curation

- Managing Digital Information in Museums
- On-site internship (placement); a full semester course with at least 120 hours working in a museum or related cultural heritage institution
- Elective chosen from the museum studies curriculum, OR a second internship
- Supervised research paper

The core courses provide an interdisciplinary foundation for understanding the principles and common tools of digital curation, while the internship and research course enable students to customize the program to gain experience and expertise in their chosen disciplinary field.

Two students are currently completing their final course requirements this semester and are on track to receive their certificates in December. I'm very pleased with the opportunities we've been able to provide for them in their internships and research projects. Both are doing their research projects as extensions of the internship, which I hope will become the norm for the program. One of these students did her internship this past summer in the Smithsonian's Office of Research Information Services, which is part of the Office of the Chief Information Officer,[viii] and she is now working on her research paper. She is working on an institutional initiative to streamline and standardize the Smithsonian's technical and descriptive archaeology metadata, currently used by a wide range of active Smithsonian field archaeologists employing a variety of different schemas. Our student mapped the metadata from different standards and schemas, including MIDAS[ix] and CARARE[x], and is investigating other potentially useful schemas to help create a user-friendly template that will be embedded

into SIdora, the Smithsonian's Fedora-based data platform. This template will support the entire data life cycle for the Smithsonian's archaeology data, from its creation and active use in the field to archiving when the field archaeologists no longer need it. The research will result in a paper that I anticipate will be published in a relevant journal and presented at one or more professional meetings.

The second student lives in San Antonio, Texas, and is doing her internship there and working on her research paper simultaneously this fall. She is interning in the special collections department at the University of Texas at San Antonio under the supervision of the head of special collections.[xi] Her internship project and research paper deal with the establishment and testing of a digital forensics "quarantine" station for new acquisitions on removable digital storage media, and for digital media already in the collections but not yet fully documented, which are being identified in a collections inventory (part of the internship project). Digital forensics is a relatively new and certainly hot topic in archives these days. It adopts principles from law enforcement developed to ensure that evidence in police custody is not corrupted by poor handling practices, and to recover "lost" files that have been nominally deleted from a storage medium but that still exist somewhere in the files.[xii] The quarantine station is designed to prevent inadvertent corruption during the process of file documentation and recovery. I anticipate that this research paper also will result in a professional publication and conference presentation. Of course, we expect that these outcomes will not only contribute to the emerging literature in digital curation but will also enhance the career prospects of our students who are doing significant work.

Even though the JHU Graduate Certificate Program in Digital Curation is just now getting up and running, we already have learned a couple of lessons:

- We wish we had proposed at the beginning allowing students to combine the MA in Museum Studies and the Digital Curation Certificate; unfortunately, we have to go back to our governing body to request this approval, but we anticipate getting it soon.
- We also would like to offer students the option of getting an MA in Digital Curation, as we think some students would prefer to have a master's degree instead of a certificate, or might want to go for an MA after getting the certificate. This will require us to go back through the University approval process and then to the Maryland Higher Education Commission (since our main campus is in Baltimore, Maryland); this could take a while but may be worth pursuing.

I'd like to end by saying, first, that we'd love to have more international students, and finally by posing a few questions for discussion:

--What skills do you think are needed in the digital curation field—what would you like to see in addition to, or perhaps instead of, our current requirements?

--What credentials are needed—a post-baccalaureate certificate (what we have now), a master's degree, or something else?

--Finally, what will we call these people? Here are some job titles that have appeared recently in job postings on the Museum-L listserv:

- Collections, Data & Imaging Assistant

- Digital Archivist
- Digital Asset Management Specialist
- Digital Collections Manager
- Digital Content Manager
- Digital Projects Manager

Some of the more innovative titles that I've heard suggested include:

- Digital steward
- Data scientist
- Research technologist
- Data concierge

In addition to these new titles, we imagine that some of our graduates will go into traditional positions, such as collections manager, with additional in-depth knowledge of the digital environment and the necessary skills to manage digital data. But I'd really like to know what you think!

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[i] "Curation," *Wikipedia* (n.d.); see also G. Wayne Clough, *Best of Both Worlds: Museums, Libraries and Archives in a Digital Age,* Smithsonian Institution, 2013, p 30, and Elaine Huemann Gurian, "The Essential Museum," in *The Informal Learning Review*, No. 89, March-April 2008.

[ii] What is digital curation?" Digital Curation Centre (n.d.), http://www.dcc.ac.uk/digital-curation/what-digital-curation

[iii] "Alphabetical List of Institutions with ALA-accredited Programs," American Library Association (n.d.), http://www.ala.org/accreditedprograms/directory/alphalist;

[iv] See for example, "Online Learning: MOOC Madness," *Chronicle of Higher Education*, August 16, 2014, http://chronicle.com/section/Online-Learning/623/. US schools with online post-graduate programs in digital curation or related topics include Drexel University, Indiana University, Johns Hopkins University, San Jose State University, Simmons College, Syracuse University, University of Arizona, University of

Maine, University of North Texas; and University of Wisconsin-Milwaukee; at least one new online program, at the University of Maryland, is in development. In addition, students in one of the 16 North American schools that are members of the WISE consortium may take online courses offered by other member schools while paying tuition only to their home institution; see WISE: Web-based Information Science Education (n.d.), http://www.wiseeducation.org/.

[v] "Data management and curation education and training," Digital Curation Centre, (n.d.), http://www.dcc.ac.uk/training/data-management-courses-and-training (Note that the list of US programs is incomplete; see previous endnote).

[vi] Johns Hopkins University, Advanced Academic Programs, Digital Curation (n.d.), http://advanced.jhu.edu/academics/certificate-programs/digital-curation-certificate/

[vii] Johns Hopkins University, Advanced Academic Programs, Museum Studies (n.d.), http://advanced.jhu.edu/academics/graduate-degree-programs/museum-studies/

[viii] Smithsonian Institution, Office of the Chief Information Officer (n.d.), http://www.si.edu/ocio

[ix] MIDAS Heritage: The UK Heritage Environment Data Standard (n.d.), http://www.english-heritage.org.uk/publications/midas-heritage/

[x] Europeana, CARARE metadata schema outline v.1.0 (n.d.), http://www.carare.eu/slv/Resources/CARARE-metadata-schema-outline-v1.0

[xi] The University of Texas at San Antonio Libraries, Special Collections (n.d.), http://lib.utsa.edu/special-collections/

[xii] See for example, Matthew G. Kirschenbaum, et al, *Digital Forensics and Born-Digital Content in Cultural Heritage Collections*, Council of Library and Information Resources, 2010, http://www.clir.org/pubs/reports/pub149