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Special Issue: Cultural Heritage

Guest Editors: Douwe Drijfhout and Tanja de Boer

Guest editorial

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Aims and Scope

IFLA Journal is an international journal publishing peer reviewed articles on library and information services and the social, political and economic issues that impact access to information through libraries. The Journal publishes research, case studies and essays that reflect the broad spectrum of the profession internationally. To submit an article to IFLA Journal please visit: <http://ifl.sagepub.com>

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Cultural Heritage (CH) consists of tangible and intangible, natural and cultural, movable and immovable assets inherited from the past. It is of extremely high value for the present and the future of a country. Access, preservation, and education around cultural heritage are essential for the evolution of people and their culture.

CH preservation and conservation management present unique practices and challenges worldwide. In Africa these are amplified by the number of languages and indigenous knowledge systems, the range of economic conditions, varying climates, and histories that encompass ancient civilizations and post-colonial realities. This special issue aims to contribute to a deeper understanding of CH preservation and highlights case studies and practices from within the cultural heritage community and context. In particular, the main goal of this issue is to gather interdisciplinary and inter-professional research on CH in African libraries, but not excluding other continents; the use of new technologies in protecting, restoring, and preserving CH; the use of digitization, documentation, and preventive conservation to make CH content accessible; and the impact of natural disasters and conflict on preserving CH (African case studies).

With the 81st IFLA General Conference and Assembly taking place in Africa this year, the need for dynamic libraries is expressed. The Congress theme 'Dynamic Libraries: Access, Development and Transformation' is of critical importance to strengthen democracy on the African continent and to eradicate poverty, illiteracy, and unemployment. The preservation and restoration of CH has always been a priority for IFLA. It is essential to monitor areas at risk, to advocate for and raise awareness about conflict and disaster prevention. With an increase in CH being abused for political propaganda and destroyed to serve certain agendas, the protection of CH has never been more important.

The editors compiled a range of articles that represent contributions from Algeria, India, Flanders (Belgium), South Africa, Jamaica, Germany and the United States. The review article provides some thought-provoking recommendations on the role of libraries and librarians in preserving, promoting, and advancing indigenous CH. Through this special issue, the editors hope to highlight the case studies and current research on cultural heritage from the perspectives of libraries and archives.

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Indigenous cultural heritage preservation: A review essay with ideas for the future

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Abstract

This literature review shows the realm of Indigenous cultural heritage preservation within libraries is an area still ripe for meaningful exploration and achievement. Yet this field is also still sensitive and potentially harmful for the cultural communities who have entrusted these institutions with their living treasures. Opportunities abound to make a difference, but they may need to evolve from changes in generational attitudes and approaches.

Keywords

Libraries and society/culture, cultural heritage management, indigenous knowledge systems, principles of library and information science, preservation and conservation, collection development

Introduction

According to the United Nations Education, Scientific, and Cultural Organization (UNESCO, 2009–2014, §1), “cultural heritage is the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations”. Notably, this definition addresses a cultural heritage’s physical characteristics, history or provenance, and importance or potential over time. The preservation of cultural heritage is therefore concerned with safeguarding both the tangible representations of culture—including everyday objects such as clothing and dwellings, as well as art in its many representations, from pottery and beadwork to painting and sculpture—and the other, less physical but equally important, aspects of traditional lifeways such as language, oral stories, customs, and beliefs.

As information settings, libraries are concerned with cultural heritage preservation from several vantage points. Firstly, they collect and house cultural heritage in numerous formats, from print to media to digital. Secondly, they create and organize records of cultural heritage, as reflected through the processes of cataloging and classification. Thirdly, they provide access to these records through specific policies and

practices (such as employing digitization as a way to document our collective memory) and, thus, assist and shape users’ understanding of the nature of that cultural heritage. Fourthly, libraries provide a location for cultural heritage to be expressed, shared, and continued by serving both as the venue for their study and as a space for holding programs and events to celebrate and contemplate heritages’ meanings. Lastly, libraries themselves provide laboratories for creating ongoing cultural heritage by providing education, equipment, and training to the wider community.

While these vantage points may differ in some regards, all of these activities fundamentally call on librarians to balance their professional standards of behavior with the protocols of the originating communities. So how do information professionals learn their roles in these different processes? Librarians turn to their professional associations, such as the International Federation of Library Associations and Institutions (IFLA), for guidance and education.

IFLA’s concern with cultural heritage preservation is apparent in its structure, statements and publications, and special initiatives. Key among IFLA’s

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structural units is the Preservation and Conservation Section, which has organized events including workshops and programs, as well as producing publications (IFLA, 2015). In 2002, IFLA released a joint statement with the International Publishers Association (IPA) that addressed the archiving and preservation of digital information by calling on national libraries, in particular, to “take the lead responsibility for long-term archiving of digital publications” (IFLA/IPA Steering Group, 2002: §6). IFLA’s commitment to cultural heritage preservation is also seen in its role as a signatory to the Lyon Declaration on Access to Information and Development, which affirms the role of libraries and archives in “preserving and ensuring ongoing access to cultural heritage” (IFLA, 2014).

Within IFLA, there is evidence that the Association has and is considering its stance specifically regarding Indigenous cultural heritage preservation. IFLA’s *Statement on Indigenous Traditional Knowledge* recommends that libraries and archives “implement programs to collect, preserve, and disseminate Indigenous and local traditional knowledge resources” (IFLA, 2002: § 4). Additionally, several IFLA Presidents have chosen to highlight Indigenous cultural knowledge and services for Indigenous people as part of their initiatives. This includes Presidents Kay Raseroka, Alex Byrne, and Ingrid Parent. Raseroka launched and supported the initial discussions that drew attention to Indigenous knowledge. Byrne formed a Presidential Committee on Indigenous Matters and sponsored several forums at the World Library and Information Congresses in 2006 and 2007, as well as a program for the Presidential Commission on Indigenous Issues in 2008. This attention led to the approval, in December 2008, of an IFLA Special Interest Group (SIG) on Indigenous Matters under the Library Services to Multicultural Populations Section. Parent chose the theme of “Indigenous Knowledges: Local Priorities, Global Contexts” for one of her two IFLA Presidential Programmes held at the University of British Columbia in the spring of 2012; archived copies of selected slides and recordings from this programme are available free online (IFLA, 2012b).

My own background in the area of cultural heritage preservation concerns the place of the information center in supporting living Indigenous cultures. Therefore, while this review article highlights past work on cultural heritage preservation in general, it does so from the perspective of work in and consideration of Indigenous cultural expressions. In addition to citing and summarizing key publications, the article provides advice for those wishing to continue to

follow this issue and/or to attend events where the topic is explored, discussed, and advanced.

Note that, while I refer throughout this article to the first peoples of the land as Indigenous or native, I acknowledge that there may be other local naming preferences. My comments are offered from the place of personal choice and preference and, as one person, my life experience is limited. I say this in my place as an Indigenous person and with respect to other Indigenous peoples across the globe: I am Anishinabe, enrolled or an official member of the White Earth Reservation, a member of the Minnesota (USA) Chippewa Tribe. For more information about me, see a recent article in the journal *AlterNative* (Roy, 2014b).

While several writings specifically in this area of cultural heritage preservation are cited here, it is important to note that those interested in the topic should broaden their perspective by engaging with writings that address the philosophies, worldviews, and epistemology of the originating cultures. For example, a true collection of writings on Indigenous cultural heritage would include a broad range of publications, from tribal newspapers to fiction and poetry. I must also note that a literature review in and of itself may not be reflective of an Indigenous approach to gathering, presenting, and sharing information. Martin (2003) points out that an Indigenous approach to writing a literature review would involve seeking information from primary sources by Indigenous peoples first, followed by reviewing both primary and secondary sources by non-Indigenous peoples. Additionally, Anderson summarizes the place of the library or archive as a colonial space, while also proposing what might happen when the power dynamic shifts so that “the people traditionally subjected to archives gain a recognized voice and question not only status within the archive, but the authority of the archive as a centre of interpretation” (Anderson, 2005: 18).

Acknowledging the limits of the printed word in reflecting Indigenous culture and of the presence of libraries and archives as colonizing structures, the following essay holds such guidance in mind while introducing sources of information that might be more easily located by any reader. At a minimum, published accounts are one way to trace the extent to which the topic is discussed within the library and information science professional literature: this is just one step in understanding Indigenous cultural heritage. Note that this review essay is in no way comprehensive, and that the titles chosen are examples of research sources. Due to my own experience and personal collection, the bias is toward English language materials produced in North America.

This literature review is organized into the following sections. Section 1 is a literature review essay, introducing publications that can answer user and librarian questions such as:

- I need an encyclopedia article on Native governments and organizations.
- Are there any special issues of journals on Indigenous cultural heritage preservation?
- Are there any entire books on Indigenous librarianship?
- What conferences might I attend to hear the latest about Indigenous cultural heritage preservation?

Section 2 summarizes literature addressing specific topics including policy, research methodologies, and practical guidance. The final section is a discussion for librarians on how to contribute to advancing awareness and continued discussion of this topic. The article then closes with suggestions for further research and of how information workers might advocate for greater attention to this issue.

Indigenous cultural heritage literature: The general literature

While Indigenous peoples have existed since long before librarianship developed as a formal profession during the late 19th century, the topic of Indigenous cultural heritage preservation is still emerging in the professional literature. This literature review summarizes the existing threads of this emerging thinking. Printed accounts of the roles of libraries, archives, and museums in preserving cultural heritage can be found as encyclopedia articles, monographs, book chapters, special issues of journals, journal articles, and conference proceedings. Several organizations additionally exist that host deep discussions, or serve as platforms for those working in cultural heritage settings to share experiences and to seek support and advice; such events often exist only in the memories of attendees. Each of these sources of knowledge is explored below.

If we were to create a path through the Indigenous cultural heritage literature, we might first want to locate a survey or overview article in an encyclopedia. There are two main types of encyclopedias: general encyclopedias and subject, or specialized, encyclopedias (Cassell and Hiremath, 2013). Since Indigenous cultural heritage preservation is in itself a special topic, a first search step might be to examine subject encyclopedias such as national encyclopedias, discipline-specific encyclopedias, and then subject encyclopedias focused on Indigenous cultures. National encyclopedias, in particular, may provide a

majority perspective on Indigenous issues and can set the stage for considering Indigenous cultural heritage. For example, *The Canadian Encyclopedia* includes an entry on “aboriginal cultural landscape” (Buggey, 2008), while the entry on “Te tāpoi Māori – Māori tourism” in *Te Ara Encyclopedia of New Zealand* includes content on “preserving culture” (Diamond, 2014).

Additionally, the Gale Virtual Reference Library (GVRL) in an index that points to content held in several reference sources, including encyclopedias, handbooks, and biographical sources. A search in GVRL under the terms “indigenous” AND “culture” AND “preservation” will yield hundreds of results, providing insight into the wide interdisciplinary interest in this topic. For example, content on cultural heritage preservation can thus be found in the *Encyclopedia of Public Health* (Durie, 2008), *Encyclopedia of Environment and Society* (Robbins, 2007), *Encyclopedia of Language and Education* (Hamel, 2008), *World History Encyclopedia* (Andrea and Neel, 2011), and *Encyclopedia of Law and Society: American and Global Perspectives* (Clark, 2007), among other sources.

A more focused coverage of Indigenous cultural heritage can be found in encyclopedias specifically on Indigenous culture. The *Handbook of North American Indians* is an incomplete encyclopedia set that was planned in the 1960s with volume 1, the final volume, scheduled to be in-press in 2015. Volume 2, published in 2008, addresses relevant topics in the chapters grouped under “Social and Cultural Revitalization”, including coverage of subjects such as repatriation (McKeown, 2008), Native museums and cultural centers (Watt and Laurie-Beaumont, 2008), and languages and language programs (Hinton, 2008). Finally, turning to our own discipline, the article on “indigenous librarianship” in the *Encyclopedia of Library and Information Science* introduces particular issues that impact Indigenous cultural heritage preservation such as access, protocols, and intellectual and cultural property rights (Burns et al., 2010).

Several monographs have been published on the place of libraries and archives in supporting Indigenous cultural heritage, especially by Hills (1997), Rockefeller-MacArthur (1998), and Roy et al. (2011). In 2013, Roy (who served as the first Convener for the IFLA SIG on Indigenous Matters from 2008 to 2013) and Frydman edited a free online book, *Library Services to Indigenous Populations: Case Studies* (Roy and Frydman, 2013). In addition, books on museums may provide insight into the attitudes and actions regarding handling, describing, and exhibiting Indigenous cultural material. Some titles focus

on the history of one or more specific museums (Force, 1999; Lonetree, 2012; Spruce and Thrasher, 2008), while others may discuss work with specific tribal communities (Clavir, 2002; McCarthy 2007, 2011). In addition to entire books, book chapters—especially in texts about social justice (Roy and Hogan, 2010) or access to knowledge (Roy et al., 2012)—might also be of use.

Only a few publications address the role of the library or archives in language recovery; Reznowski and Joseph's book chapter (2011) addresses the potential for archivists to work with tribal members in such efforts. However, libraries and museums can play critical roles in working with Indigenous communities in the protection and recovery of Indigenous languages. Many of these languages are sleeping, largely as a result of colonization practices that aimed to force or encourage Native peoples to cast off their ethnic identities and to assume the language, beliefs, and behaviors of western cultures.

Many resources are now available to libraries for supporting such Indigenous language study, including print and online dictionaries, language courses on DVD, and other publications, such as board books for young readers. Several such resources are published locally and with limited distribution. Some publishers may specialize in Indigenous content and even produce bi-lingual publications: in the United States this includes Salina Bookshelf (2015), a publisher of high-quality children's board books and picture books, as well as of Navajo language materials. Similarly, Birchbark Books (2015) publishes literature supporting Anishinabemowin, the language of the Anishinabe of the Great Lakes region of the United States, through Wiigwaas Press.

In addition to encyclopedia articles and topical books, a number of special issues of journals have been published that focus on Indigenous cultural heritage. This list includes an issue of *World Libraries* (2002), *D-Lib Magazine* (2002), several issues of *The Electronic Library* (2003a, 2003b), an issue of *International Preservation News* (2013), and a special issue on Native American Archives in the *Journal of Western Archives* (2015). Ongoing coverage of Indigenous issues also appears in the newsletters of professional associations, such as the *American Indian Libraries Newsletter* of the American Indian Library Association, which is one of five ethnic library organizations affiliated with the American Library Association (ALA).

Such journal articles may focus on materials, collections, or services, or may even present cases of activities at one site, thereby providing greater context in the discussion of Indigenous cultural heritage.

Roy (1993), for example, discusses providing readers' advisory services for Indigenous patrons who live far from their homelands, while Danowitz and Videon (2010) introduce online resources on American Indians. IFLA's own journal has published a number of articles that illustrate the organization's support of professional literature on traditional heritage preservation, such as Chakravarty's (2010) article on the Traditional Knowledge Digital Library of India and Greyling and Zulu's (2010) article on the Ulwazi website that includes a database of Indigenous knowledge in South Africa.

As we begin to look beyond the traditional written venues for developing the Indigenous cultural heritage literature, the proceedings of conferences provide a useful means to read print versions of past presentations. Some conferences to watch include the annual IFLA World Library and Information Congress (WLIC), where meetings of the SIG on Indigenous Matters have been held annually since August 2009. The SIG often sponsors a program at IFLA and presentations on this topic are often included in programs at the WLIC, especially those hosted by the IFLA Section on Library Services to Multicultural Populations. The Section sometimes additionally organizes an IFLA Satellite meeting prior to or after the IFLA World Library and Information Congress, and issues calls for presentations on topics such as services for Indigenous communities.

Not all conference presentations on Indigenous cultural heritage are published in print or online, however. Such events include presentations on Indigenous matters that take place at national, state, or regional conferences that are organized by units or individuals interested in the topic. For example, the Association of Tribal Libraries, Archives, and Museums (ATALM) organizes the annual International Conference of Indigenous Archives, Libraries, and Museums; this conference is held in various locations within the United States and is open to any registrant interested in the work of tribal museums, libraries, archives, and native language recovery. ATALM was founded in 2011 and, while it does not publish proceedings, it has supported reports that would be of use to anyone interested in the topic (Jorgensen, 2012; Jorgensen et al., 2014). Another relevant setting for the discussion of Indigenous matters in educational settings, including libraries, is the World Indigenous Peoples Conference on Education (WIPC: E); WIPC: E takes place every three years in locations around the globe and is open to any delegate interested in matters of Indigenous education. Relevant presentations are additionally often found at the annual conferences of ALA, as well as at those of the

Australian Library and Information Association, Canadian Library Association, and Library and Information Association New Zealand Aotearoa. Interdisciplinary meetings such as those of NAISA (Native American and Indigenous Studies Association) and the Popular Culture Association/American Culture Association provide options for presenters from all disciplines, including librarianship, to share papers.

Some meetings are developed for a specific constituency and not open to nonmembers. Such events include the annual Tribal College Librarians Professional Development Institute held for a week in June (usually in Bozeman, Montana, USA), and the Convening Culture Keepers meetings held for those working at tribal libraries, archives, and museums in Wisconsin and Minnesota, USA. In 1999, the first International Indigenous Librarians Forum (IILF) took place in Auckland, Aotearoa/New Zealand (Roy, 2000). Since then, IILF has taken place every other year in rotating locations, including venues in Sweden, the United States, Canada, Australia, Aotearoa/New Zealand, and Norway. One tradition of this meeting is for Indigenous delegates to meet as a council and to create some product that particularly represents the gathering, such as a mission statement or a plan of action. The IILF proceedings are sometimes published, but usually with distribution limited to Forum attendees. While some portion of IILF is open to non-Indigenous attendees, each Forum usually organizes time for Indigenous-only deliberation.

Additionally, some gatherings are one-off events where participants produce statements or agendas with wide-reaching potential. For example, Article 13 of the *Declaration of Principles Building the Information Society: A Global Challenge in the New Millennium* was the result of work conducted at the 2003 World Summit on the Information Society (WSIS) and stated that “in the evolution of the Information Society, particular attention must be given to the special situation of Indigenous peoples, as well as to the preservation of their heritage and their cultural legacy” (World Summit on the Information Society 2003: Article 15). Other such noteworthy events include the 2009 Salzburg Global Seminar on “Connecting to the World’s Collections: Making the Case for the Conservation and Preservation of Our Cultural Heritage” (Stoner, n.d.) and the 2012 IFLA Presidential Programme on “Indigenous Knowledges: Local Priorities, Global Contexts”.

My discussion here has demonstrated that the academic literature on the role of libraries in preserving and promoting Indigenous cultural heritage is still rather sparse and underdeveloped. The next section presents a brief introduction to supportive policy and

protocol documents that are providing a broader context.

Indigenous cultural heritage preservation: Selected relevant policy documents

The increasing importance of digital cultural heritage expands the discussion surrounding Indigenous cultural heritage to legal and policy issues, bringing in topics such as e-publishing, e-lending, and access, including the notion of the right to be forgotten. Lor and Britz (2012), for example, consider the ethical considerations underlying preservation of digital content. Their table on the “Information Rights of Moral Agents Involved in, or Affected by Digital Presentation”, summarizes various rights involved such preservation—from personal autonomy to own intellectual property—that might be attributed to places or people, which they refer to as moral agents. They define moral agents as individuals, groups, or institutions including authors/creators, originating communities, rights holders, holding institutions, persons depicted, digitizing/acquiring institutions, and users (Lor and Britz 2012: 2157). Some rights are supported by more than one moral agent and, thus, create potential conflict areas. Some of these potential conflict areas are explored in a variety of policy documents that set the stage for working with Indigenous cultural heritage.

Recent writings have described how accommodations need to be made to the professional standards and processes learned by librarians and archivists (Ogden, 2007). The most influential and controversial publications in the area of cultural heritage are those created for the use and access of representations of traditional cultural expression. The first statement was the *Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous People* (Mataatua, 1993). This brief document outlines recommendations for Indigenous peoples to define, develop, maintain, and protect their traditional practices and calls on states, nations, and organizations for support. In 2000, a group of educators in Alaska collaborated on guidelines for working with Indigenous communities, resulting in a series of documents that provide guidance to tribal elders, educators, parents, and authors, among others, who have roles in tribal cultural heritage (Assembly of Alaska Native Educators, 2000).

Within the library and archives communities, the primary groundbreaking document was the protocols developed by and distributed through the Aboriginal and Torres Strait Islander Library and Information Resource Network (ATSILRN) (1994); these protocols

start with the recognition that the Indigenous peoples of Australia are the owners of their traditional knowledge. The ATILIRN protocols stimulated the development of a similar document in the United States by The First Archivists Circle, known as the *Protocols for Native American Archival Materials*. Although these Protocols have not been formally accepted or endorsed by the Society of American Archivists (SAA), they have prompted much discussion on topics such as access, especially with regard to non-tribal access to materials that might be culturally sensitive (First Archivists Circle, 2006).

On a global scale, the *United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)* (United Nations General Assembly, 2007) serves as a critical model for work with Indigenous peoples. Specifically, Article 11 affirms that “Indigenous peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures”. Article 13 additionally states that “Indigenous peoples have the right to revitalize, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures”, while Article 31 asserts that “Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions” (United Nations General Assembly, 2007). Adopted by the United Nations General Assembly in 2007, these three articles affirm the leadership role that Indigenous people may take in their own cultural heritage preservation. Similarly, Springer (2013) provides an overview of UNESCO’s activities related to the preservation of Indigenous knowledge.

Before and after writing such policy documents, these recommendations must be developed, considered, and tested. Research methods and theory provide a broader context within which the topic of Indigenous cultural heritage preservation might be viewed. Those are the topics of the next section.

Indigenous cultural heritage literature by issue: Research methodologies and theory

Writing on Indigenous cultural heritage preservation might require researchers to adopt a non-western orientation that is more reflective of Indigenous worldview. Adopting a new perspective may be challenging since the topic is not well covered in library and information science curricula and little addressed in professional statements within librarianship. Thankfully, inroads have been made within several

literatures that call on researchers to challenge their methods while proposing alternatives.

Decolonizing Methodologies, Tuhiwai Smith’s (1999) ground-breaking text, argues that there are other valid research methodologies besides those based on the scientific method and that are better suited for work with Indigenous peoples. Her work has stimulated other publications, including Wilson’s *Research is Ceremony* (2008), the decolonizing handbook (Denzin et al., 2008), and writings on decolonizing research in other disciplines such as social work (Gray et al., 2013). Martin (2003) calls for an Indigenist approach to conducting research that recognizes Indigenous worldviews, honors their social values, emphasizes the contexts in which they lived, and privileges the Indigenous voice and experience. Both Martin (2003) and Wilson (2008) call on Indigenous scholars to base their research approaches on their Indigenous ontology, or views on reality.

Within the library and archives literature, Lone-tree’s (2012) *Decolonizing Museums* specifically examines how the museum setting might be decolonized, and illustrates this concept through detailed case studies of three museums in the United States. Nakata’s (2002) concept of the Cultural Interface provides the best model for the interaction between information workers and indigenous peoples and their cultural representations. Indigenous peoples live in this interface, the place where their Indigenous lifeways and western viewpoints come together, and “a place of tension that requires constant negotiation” (Nakata, 2002: 286). Within this space Indigenous living may either flourish or be repressed, and it is here that cultural heritage institutions reside.

Thus, the role of these institutions, including libraries and archives, within this space cannot be underestimated. Respectful and supportive work within the Cultural Interface can be assisted, however, by a mindful attention to practice—the details of which are introduced in the next section.

Indigenous cultural heritage literature by issue: Practical guidance

The literature review section of this article thus far has largely provided a summary of the print literature available on the preservation of Indigenous cultural heritage, as well as highlighting important policy documents. The topic has been further supported by a discussion of adopting non-western research methods with an underlying model or theory that specifically places Indigenous cultural heritage in the realm of the world’s knowledge and that describes the intersection

between this knowledge and the mission of cultural heritage institutions, including libraries. This section now presents some of the practice-oriented literature on how to accomplish preservation of Indigenous cultural heritage.

As Graham (2003: 224) points out, “without preservation there will be no long-term access to heritage materials”. Byrne (2003) adds a caveat to the rush to equate digitization with access, noting that barriers to access might emerge:

But the access is not without limitations. It is limited by the availability of reliable and affordable information and communication technologies. It is limited to those scholars and students who are affiliated to organisations which have the money and skills to provide access. It is limited to those who are literate, information-literate, and have a command of the major languages of commerce and scholarship and, of course, English in particular. In addition, contractual and other bounds imposed by vendors exclude many potential users. (Byrne, 2003: 415)

Thus, even with broad-scale support for digital cultural heritage, there are still barriers toward advancing these topics and any resultant products.

While digitization is often regarded as the de facto process for preservation, Christen (2011: 193) warns that:

digital technologies and the Internet have combined to produce both the possibility of greater Indigenous access to collections, as well as a new set of tensions for communities who wish to gain some control over the classification of, access to, and cultural protocols for the circulation of those materials.

For example, Boamah et al. (2012) summarize the hindrances to digital preservation of cultural heritage (DPCH) in Ghana and point to the lack of interest among key stakeholders as the primary reason why DPCH has not been a priority within the country. Although such barriers are yet to be overcome, a number of existing publications can provide guidance and practical advice in cultural heritage preservation initiatives.

TRAILS (2008) is a free notebook available on the website of ALA’s Office for Diversity, Literacy and Outreach Services. It includes sections on developing library collections and how to care for them, including book repair, emergency planning, and planning digital projects. The *Guide to Building Support for Your Tribal Library Toolkit* is available free on the ALA website to anyone wishing to advocate for their tribal library (American Library Association, 2008). Cooper

and Sandoval (2006) additionally provide essays with considerable practical advice for starting local community museums, advice that can also be applied to library project management. One of IFLA’s key publications on cultural heritage is the *IFLA Disaster Preparedness and Planning* manual that is available for free online and in multiple languages (McIlwain, 2006). Ogden’s (2004) *Caring for American Indian Objects: A Practical and Cultural Guide* has both general advice on topics such as handling and house-keeping and specialized advice for objects specific to Indigenous cultural materials, such as birch bark, quills, shells, skin and skin products, and glass beads.

Central to most library literature is the topic of collection development. Hogan (2011: 82) found that “a survey of the library literature on collection development reveals few articles or books addressing collection development specifically in tribal libraries”. Those writings that do address publications for and about Native peoples often introduce titles and advice for non-Native serving libraries on building collections specifically for children and youth. Such publications do not address the needs of adult library patrons. Advocacy for books by writers of color that depict people from many cultural backgrounds in contemporary settings has culminated in the “We Need Diverse Books” (2015) campaign in the United States. An overview of the current status of Indigenous children’s literature of the Americas can be found in *The Oxford Handbook of Indigenous American Literature* (Roy, 2014a). Local efforts have also developed to increase this literature, including the publication of material by Indigenous communities in the local languages. To keep up to date on new Indigenous literature for youth, readers can follow book award winners, such as those recognized through the American Indian Library Association Youth Literature Awards. Another key source to follow for updated information on Indigenous children’s literature and related issues is Reese’s (2015) popular blog, “American Indians in Children’s Literature”.

Recommendations, further research, and advocacy

In Ekwelem et al.’s (2011) literature review, they offer several recommendations for advancing the preservation of cultural heritage. These recommendation focus specifically on the “(1) training of librarians . . . (2) provision of infrastructure . . . (3) adequate funding . . . (4) environmental conditions . . . (5) provision of internet infrastructure . . . [and] (6) building in incentives for the local population” (Ekwelem et al., 2011: 106). Touching on many of these issues,

Jorgensen (2012: 14) found that tribal archives, libraries, and museums were ill-prepared in the particular areas of “conservation, preservation and emergency preparedness”, with one-third of these institutions reporting that they had no single person on their staff with these responsibilities.

All of these more general recommendations are also relevant specifically for advancing Indigenous cultural heritage preservation. I will examine one of these recommendations, that of training, in some depth, and then briefly mention several others. Overall, these recommendations point to the need for one or more organizations to coordinate and support the needs of the individual librarian, so that they may acquire the skills (with adequate support) to both convince and collaborate with their local communities.

As Indigenous communities recover and build their economies, they reach out to libraries, archives, and museums as settings with staff knowledgeable in cultural preservation (Roy et al., 2012). There is a need for education and training for all library, archives, and museum staff in order to acquire some degree of cultural competency as well as the specific techniques and processes involved in the preservation of Indigenous cultural heritage. Since people of color are still underrepresented in graduate programs of library and information science, those working with Indigenous cultural expressions and their creators may not be tribal community members. Overall (2009) provides an additional rationale for acquiring cultural competence, arguing that “knowledge about diverse cultures begins a lifelong process of learning about cultural differences to effectively reach those who would benefit the most from library services” (p. 200). It therefore behooves all library staff, librarians and archivists as well as their educators, to be open to acquiring training on understanding Indigenous ways and working with representations of Indigenous cultural views.

IFLA’s 2012 *Guidelines for Professional Library/Information Educational Programs* introduces 11 curricular areas that the IFLA considers critical for the education of librarians. While cultural heritage preservation might be addressed under a number of areas, from “information resource management” to “management of information agencies”, it is core element eleven, “awareness of Indigenous knowledge paradigms”, that affirms a global responsibility for educating librarians to understand their place in serving these audiences (IFLA 2012a: 5). These 11 curricular areas were based on the professional development scheme in New Zealand/Aotearoa. Librarians who seek to achieve or retain professional registration within New Zealand must show continuing competency in the

11 content areas that together constitute the Body of Knowledge, the last of which is “Awareness of Indigenous Knowledge Paradigms” (Library and Information Association New Zealand Aotearoa, 2015).

At the national level in the United States, Master’s programs seeking accreditation through ALA report on how they meet the particular standards for accreditation whereby “the nature of a demonstrably diverse society is referenced throughout the Standards because of the desire to recognize diversity, defined in the broadest terms, when framing goals and objectives, designing curricula, and selecting and retaining faculty and students” (American Library Association, 2015). Still, more tailored preservation training options for those working specifically with Indigenous cultural heritage is needed. Such national training opportunities could replicate those offered in New Zealand, where workshops on training and care of Indigenous cultural material have been brought directly to the source communities (Graham, 2003). These workshops were predicated on the development of specialized Indigenous staff, who then lead such localized training efforts. A similar suggestion evolved from the 2009 Salzburg Global Seminar, which recommended resources training for the non-specialist, starting with an understanding of “Why Preserve?” (Stoner, n.d.).

Within the domain of further education is the need for continuing discussions on what it means to hold and care for Indigenous cultural heritage. Such discussions would engage Indigenous and non-Indigenous cultural heritage workers in sharing their views of objects and content, use of materials, and the cultural context of such use. Additionally, the results of such discussions and deliberations should be disseminated more broadly, and key discussions should not be limited only to those with the resources to travel and the professional connections that endow participants with elite status.

These changes involve critically challenging professional values, in order to ensure that the Library and Archives profession no longer reflects western colonized views of interactions with Indigenous peoples. A cultural heritage representative must not only learn to advocate for the security and well-being of the cultural material they house; they must also shift their ways of thinking in order to make sure that their use and access place traditional lifeviews as primary. Each individual information worker should “think critically about their practice in relation to indigenous peoples” (McCarthy, 2011: 1). Roy and Trace (forthcoming) argue that simply consulting with Indigenous communities about their cultural

heritage is insufficient; negotiation and power sharing is needed.

Cultural heritage institutions should review their policies in order to make sure that they are welcoming to Indigenous source communities and librarians “must engage with how Indigenous peoples choose to be cultural” (Roy et al., 2012: 126). Librarians must also embrace a new protocol and worldview that values the records of the past through the eyes of their creators’ descendants, as we are reminded in the Maori phrase, “me hoki whakamuri, kia ahu whakamua, ka neke”, or “our future lies in the past” (Heikell, 2013). Together, these communities and the libraries that serve them can imagine work settings with policies and other directives that welcome Indigenous peoples.

In addition to changing such local policies, national professional associations should follow the lead of LIANZA and enter into a contract with their Indigenous information workers. Individual libraries and information settings should look to the actions and activities of other cultural heritage institutions. For example, McCarthy (2011: 5) describes how “increasingly, the relationship between the museum and source communities has moved beyond consultation and collaboration to explore new ways of working that ask ‘for partnership rather than superficial involvement’, in which both parties share power”. This model can easily be applied to libraries, as well.

New theoretical models for implementing such changes will continue to emerge, as many young scholars are concentrating on services for Indigenous peoples by doing extensive reading, opening discussions, writing, and connecting Indigenous knowledge paradigms to what librarianship has to offer. New tools are being developed, while frameworks brought in from other disciplines are offering different ways of thinking. As this introductory literature review has shown, the realm of Indigenous cultural heritage preservation within libraries is still ripe for meaningful exploration and achievement. Yet this field is also still sensitive and potentially harmful for the cultural communities who have entrusted these institutions with their living treasures. Opportunities abound to make a difference, but they may need to evolve from changes in generational attitudes and approaches.

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References

Aboriginal and Torres Strait Islander Library and Information Resource Network (1994) *Aboriginal and Torres*

- Strait Islander Protocols for Libraries, Archives, and Information Services*. Available at: <http://atsilirn.aiatsis.gov.au/protocols.php> (accessed 20 May 2015).
- American Library Association (2015) *Standards of Accreditation of Master's Programs in Library and Information Studies*. Available at: http://www.ala.org/accreditedprograms/sites/ala.org.accreditedprograms/files/content/standards/Standards_2015_adopied_02-02-15.pdf (Accessed 15 May 2015).
- American Library Association. Office for Diversity, Literacy, and Outreach Services (2008) *Guide to Building Support for Your Tribal Library Toolkit*. Available at: <http://www.ala.org/offices/olos/toolkits/triballibrary> (accessed 20 May 2015).
- Anderson J (2005) Access and control of Indigenous knowledge in libraries and archives: Ownership and future use. In: *Correcting course: Rebalancing copyright for libraries in the national and international arena*, Columbia University, NY, USA, 5–7 May 2005. Available at: http://ccnmtl.columbia.edu/projects/alaconf2005/paper_anderson.pdf (accessed 20 May 2015).
- Andrea AJ and Neel C (eds) (2011) Indigenous people of the Caribbean since 1945. In: *World History Encyclopedia*. Santa Barbara, CA: ABC-CLIO, pp. 388–391. Gale Virtual Reference Library. Available at: <http://go.galegroup.com/ps/i.do?id=GALE%7CCX2458803956&v=2.1&u=txshradc2598&it=r&p=GVR&sw=w&asid=43c0be001f1a0326a246fcb7b83fb637> (accessed 13 May 2015).
- Assembly of Alaska Native Educators (2000) *Guidelines for Respecting Cultural Knowledge*. Available at: <http://www.ankn.uaf.edu/publications/Knowledge.pdf> (accessed 20 May 2015).
- Boamah E, Dorner DG and Oliver G (2012) Stakeholders’ attitudes towards the management and preservation of digital cultural heritage resources in Ghana. *Australian Academic & Research Libraries* 43(4): 300–317.
- Birchbark Books* (2015) Available at: <http://birchbarkbooks.com/wiigwaas-press> (accessed 16 May 2015).
- Buggey S (2008) Aboriginal cultural landscape. In: *The Canadian Encyclopedia*. Available at: <http://www.thecanadianencyclopedia.com/en/article/aboriginal-cultural-landscape/> (accessed 15 May 2015).
- Burns K, Doyle A, Joseph G, et al. (2010) Indigenous librarianship. In: *Encyclopedia of Library and Information Sciences*. 3rd edn. Florence, KY: Taylor & Francis, pp. 2330–2346.
- Byrne A (2003) Digital libraries: Barriers or gateways to scholarly information? *The Electronic Library* 21(5): 414–421.
- Cassell KA and Hiremath U (2013) *Reference and Information Services: An Introduction*. 3rd edn. Chicago, IL: American Library Association.
- Chakravarty R (2010) Preserving traditional knowledge: Initiatives in India. *IFLA Journal* 36(4): 294–299.
- Christen K (2011) Opening archives: Respectful repatriation. *The American Archivist* 74(1): 185–210.

- Clark D S (ed.) (2007) Aboriginal and indigenous peoples, legal systems of. In: *Encyclopedia of Law and Society: American and Global Perspectives*. Thousand Oaks, CA: SAGE, pp. 1–6. Gale Virtual Reference Library. Available at: <http://go.galegroup.com/ps/i.do?id=GALE%7CCX3470300014&v=2.1&u=txshracd2598&it=r&p=GVRL&sw=w&asid=2707a39d74e2f9eac8b4d704b1072e38> (accessed 13 May 2015).
- Clavir M (2002) *Preserving what is Valued: Museums, Conservation, and First Nations*. Vancouver, British Columbia: UBC Press.
- Cooper KC and Sandoval NI (eds) (2006) *Living Homes for Cultural Expression: North American Native Perspectives on Creating Community Museums*. Washington, DC: National Museum of the American Indian, Smithsonian Institution.
- Danowitz ES and Videon C (2010) Native American resources: Sites for online research. *College & Research Libraries News* 71(8): 430–435.
- Denzin NK, Lincoln YS and Tuhiwai Smith L (eds) (2008) *Handbook of Critical and Indigenous Methodologies*. Los Angeles, CA: SAGE.
- Diamond P (2014) Te tāpoi Māori – Māori tourism – Preserving culture. In: *Te Ara – The Encyclopedia of New Zealand*. Available at: <http://www.TeAra.govt.nz/en/te-tapoi-maori-maori-tourism/page-3> (accessed 20 May 2015).
- D-Lib Magazine (2002) Digital technology and indigenous communities. Special Issue, ed. Atkins DE and Holland MP, 8(3).
- Durie M (2008) Cultural preservation and protection. In: Kirch W (ed.) *Encyclopedia of Public Health*. New York: Springer, pp. 186–188. Gale Virtual Reference Library. Available at: <http://go.galegroup.com/ps/i.do?id=GALE%7CCX3241000393&v=2.1&u=txshracd2598&it=r&p=GVRL&sw=w&asid=adc0db6d512-a8806878609d80f606082> (accessed 13 May 2015).
- Ekwelam VO, Okafor VN and Ukwoma SC (2011) Preservation of cultural heritage: The strategic role of the library and information science professionals in south east Nigeria. *Library Philosophy and Practice*: 95–108.
- The Electronic Library* (2003a) Winds of change: Libraries in the twenty-first century. Special Issue, ed. Raitt D, 21(3).
- The Electronic Library* (2003b) The impact of IT on indigenous peoples. Special Issue, ed. Roy L and Raitt D, 21(5).
- First Archivists Circle* (2007) *Protocols for Native Archival Materials*. Available at: <http://www2.nau.edu/lib-ntp-protocols.html> (accessed 18 May 2015).
- Force RW (1999) *Politics and the Museum of the American Indian: The Heys & the Mighty*. Honolulu: Mechas.
- Graham T (2003) Electronic access to and the preservation of heritage materials. *The Electronic Library* 32(3): 223–226.
- Gray M, Coates J, Yellow Bird M, et al. (2013) *Decolonizing Social Work*. Farnham, England; Burlington, VT: Ashgate.
- Greyling E and Zulu S (2010) Content development in an indigenous digital library: A case study in community participation. *IFLA Journal* 30(1): 30–39.
- Hamel RE (2008) Indigenous language policy and education in Mexico. In: *Encyclopedia of Language and Education*. 2nd edn. New York: Springer, pp. 301–313. Gale Virtual Reference Library. Available at: <http://go.galegroup.com/ps/i.do?id=GALE%7CCX3045500036&v=2.1&u=txshracd2598&it=r&p=GVRL&sw=w&asid=b4025972a9c3cada391fd5e21d289244> (accessed 13 May 2015).
- Heikell V-A (2013) Our future lies in the past: Me hoki whakamuri, kia ahu whakamua, ka neke. *International Preservation News* 61: 12–14.
- Hills G (1997) *Native Libraries: Cross-Cultural Conditions in the Circumpolar North*. Lanham, MD; London: Scarecrow.
- Hinton L (2008) Languages and language programs. In: Bailey GA (ed.) *Handbook of North American Indians. Vol. 2: Indians in Contemporary Society*. Washington, DC: Smithsonian Institution, pp. 351–364.
- Hogan K (2011) Tribal libraries as the future of librarianship: Independent collection development as a tool for social justice. In: Roy L, Bhasin A and Arriaga SK (eds) *Tribal Libraries, Archives, and Museums: Preserving Our Language, Memory and Lifeways*. Lanham, MD: Scarecrow, pp. 81–103.
- IFLA (2002) *IFLA Statement on Indigenous Traditional Knowledge*. Available at: <http://www.ifla.org/publications/ifla-statement-on-indigenous-traditional-knowledge> (accessed 20 May 2015).
- IFLA (2012a) *Guidelines for Professional Library/Information Educational Programs*. Available at: <http://www.ifla.org/files/assets/set/publications/guidelines/guidelines-for-professional-library-information-educational-programs.pdf> (accessed 15 May 2015).
- IFLA (2012b) *Indigenous Knowledges: Local Priorities, Global Contexts*. Available at: <http://iflaindigenous-knowledges2012.ok.ubc.ca/> (accessed 20 May 2015).
- IFLA (2014) *The Lyon Declaration on Access to Information and Development*. Available at: <http://www.lyondeclaration.org/contact/> (accessed 20 May 2015).
- IFLA (2015) *Preservation and Conservation Section*. Available at: <http://www.ifla.org/preservation-and-conservation> (accessed 20 May 2015).
- IFLA/International Publishers Association Steering Group (2002) *Preserving the Memory of the World in Perpetuity: A Joint Statement on the Archiving and Preserving of Digital Information*. Available at: <http://www.ifla.org/publications/preserving-the-memory-of-the-world-in-perpetuity-a-joint-statement-on-the-archiving-and> (accessed 20 May 2015).
- International Preservation News* (2013) Strategies of Conservation and Cultural Identities. Special Issue 61. Available at: <http://www.ifla.org/node/8369> (accessed 9 July 2015).
- Jorgensen MJ (2012) *Sustaining Indigenous Culture: The Structure, Activities, and Needs of Tribal Archives*,

- Libraries, and Museums*. Oklahoma City, OK: Association of Tribal Archives, Libraries, and Museums.
- Jorgensen M, Morris T and Feller S (2014) *Digital Inclusion in Native Communities: The Role of Tribal Libraries*. Oklahoma City, OK: Association of Tribal Archives, Libraries, and Museums.
- Journal of Western Archives* (2015) Native American archives. Special Issue, ed. O'Neal J and Lewis DG, 6(1).
- Library and Information Association New Zealand Aotearoa* (2015) *BOK 11*. Available at: <http://www.lianza.org.nz/bok-11> (accessed 20 May 2015).
- Lonetree A (2012) *Decolonizing Museums: Representing Native America in National and Tribal Museums*. Chapel Hill, NC: University of North Carolina Press.
- Lor PJ and Britz JJ (2012) An ethical perspective on political-economic issues in the long-term preservation of digital heritage. *Journal of the American Society for Information Science and Technology* 63(11): 2153–2164.
- McCarthy C (2007) *Exhibiting Maori: A History of Colonial Cultures of Display*. Wellington, New Zealand: Te Papa Press.
- McCarthy C (2011) *Museums and Maori: Heritage Professionals, Indigenous Collections, Current Practice*. Wellington, New Zealand: Te Papa Press.
- McIlwain J (2006) *IFLA Disaster Preparedness and Planning: A Brief Manual*. Available at: <http://www.ifla.org/publications/ifla-disaster-preparedness-and-planning-a-brief-manual?og=8708> (accessed 20 May 2015).
- McKeown CT (2008) Repatriation. In: Bailey GA (ed.) *Handbook of North American Indians*. Washington, DC: Smithsonian Institution. pp. 427–437.
- Martin K (2003) Ways of knowing, ways of being and ways of doing: A theoretical framework and methods for Indigenous re-search and Indigenist research. *Journal of Australian Studies (Special Issue: Voicing Dissent)* 27(76): 203–214.
- Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous People* (1993) Available at: <http://ankn.uaf.edu/IKS/mataatua.html> (accessed 20 May 2015).
- Nakata M (2002) Indigenous knowledge and the cultural interface: Underlying issues at the intersection of knowledge and information systems. *IFLA Journal* 28(5/6): 281–289.
- Ogden S (ed) (2004) *Caring for American Indian Objects: A Practical and Cultural Guide*. St Paul, MN: Minnesota Historical Society Press.
- Ogden S (2007) Understanding, respect, and collaboration in cultural heritage preservation: A conservator's developing perspective. *Library Trends* 56(1): 275–287.
- Overall PM (2009) Cultural competence: A conceptual framework for library and information science professionals. *Library Quarterly* 79(2): 175–204.
- Reese D (2015) In: American Indians in Children's Literature. Available at: <http://americanindiansinchildrensliterature.blogspot.com/> (accessed 15 May 2015).
- Reznowski G and Joseph NA (2011) Out of the archives: Fostering collaborative environments for language revitalization. In: Roy L, Bhasin A and Arriaga SK (eds) *Tribal Libraries, Archives and Museums: Preserving Our Language, Memory, and Lifeways*. Lanham, MD: Scarecrow, pp. 47–57.
- Robbins P (2007) Knowledge. In: Robbins P (ed.) *Encyclopedia of Environment and Society*. Thousand Oaks, CA: SAGE, pp. 985–989. Gale Virtual Reference Library. Available at: <http://go.galegroup.com/ps/i.do?id=GALE%7CCX2660700615&v=2.1&u=txshracd2598&it=r&p=GVRL&sw=w&asid=75d62e57a3cecf1f1fbff08-f680af327> (accessed 13 May 2015).
- Rockefeller-MacArthur E (1998) *American Indian Library Services in Perspective: From Petroglyphs to Hypertext*. Jefferson, NC: McFarland.
- Roy L (1993) Recovering Native identity: Readers' advisory services for non-reservation Native Americans. *Collection Building* 12(3/4): 73–77.
- Roy L (2000) The International Indigenous Librarians' Forum: A professional life-affirming event. *World Libraries* 10(1/2): 19–30.
- Roy L (2014a) Indigenous children's literature. In: Cox JH and Justice DH (eds) *The Oxford Handbook of Indigenous American Literature*. Oxford: Oxford University Press, pp. 333–343.
- Roy L (2014b) Leading a fulfilled life as an Indigenous academic. *AlterNativ*, 10(3): 303–310.
- Roy L and Frydman A (2013) *Library Services to Indigenous Peoples: Case Studies*. Available at: <http://www.ifla.org/publications/library-services-to-indigenous-populations-case-studies> (accessed 15 May 2015).
- Roy L and Hogan K (2010) We collect, organize, preserve, and provide access, with respect: Indigenous peoples' cultural life in libraries. In: Edwards JB and Edwards SP (eds) *Beyond Article 19: Libraries and Social, and Cultural Rights*. Duluth, MN: Library Juice, pp. 113–147.
- Roy L and Trace CB (Forthcoming) Beyond stewardship and consultation: Use, care, and protection of indigenous cultural heritage. In: Salvatore CL (ed.) *Cultural Heritage Management in Libraries, Archives, and Museums: Global Perspectives*.
- Roy L, Bhasin A and Arriaga SK (eds) (2011) *Tribal Libraries, Archives, and Museums: Preserving Our Language, Memory and Lifeways*. Lanham, MD: Scarecrow.
- Roy L, Hogan K and Lilley S (2012) Balancing access to knowledge and respect for cultural knowledge: Librarian advocacy with indigenous peoples' self-determination in access to knowledge. In: Lau J, Tammamo AM and Bothma T (eds) *Libraries Driving Access to Knowledge*. The Hague: International Federation of Library Associations and Institutions, pp. 163–189.
- Salina Bookshelf (2015) Available at: <http://www.salina-bookshelf.com/> (accessed 18 May 2015).
- Springer J (2013) UNESCO's contribution to preserving traditional and indigenous knowledge. *International Preservation News* 61: 6–7.

- Spruce DB and Thrasher T (eds) (2008) *The Land Has Memory: Indigenous Knowledge, Native Landscapes and the National Museum of the American Indian*. Washington, DC: National Museum of the American Indian, Smithsonian Institution; Chapel Hill, NC: University of North Carolina Press.
- Stoner JH (n.d.) *Connecting to the World's Collections: Making the Case for the Conservation and Preservation of Our Cultural Heritage*. Washington, DC: Institute of Museum and Library Services. Available at: http://www.imls.gov/assets/1/AssetManager/SGS_Report.pdf (accessed 18 May 2015).
- TRAILS: *Tribal Library Procedures Manual* (2008) 3rd edn. Available at: <http://www.ala.org/offices/olos/toolkits/trails> (accessed 17 May 2015).
- Tuhiwai Smith L (1999) *Decolonizing Methodologies: Research and Indigenous Peoples*. London; New York: Zed Books; Dunedin, New Zealand: University of Otago Press.
- United Nations General Assembly (2007) *United Nations Declaration on the Rights of Indigenous Peoples*. Available at: http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf (accessed 20 May 2015).
- UNESCO. UNESCO Office in Cairo (2009–2014) *Tangible Cultural Heritage*. Available at: <http://www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage/> (accessed 15 April 2015).
- Watt LJ and Laurie-Beaumont BL (2008) Native museums and cultural centers. In: Bailey GA (ed.) *Handbook of North American Indians. Vol. 2: Indians in Contemporary Society*. Washington, DC: Smithsonian Institution, pp. 338–350.
- We Need Diverse Books Official Campaign Site (2015) Available at: <http://weneeddiversebooks.org/#> (accessed 19 May 2015).
- Wilson S (2008) *Research Is Ceremony: Indigenous Research Methods*. Halifax, Winnipeg: Fernwood.
- World Libraries. (2002) Indigenous Librarianship. Special Issue, ed. Roy L and Saari P, 12(1).
- World Summit on the Information Society (2003) *Declaration of Principles. Building the Information Society: A Global Challenge in the New Millennium*. Available at: <http://www.itu.int/wsis/docs/geneva/official/dop.html> (accessed 18 May 2015).

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The digital library in the re-inscription of African cultural heritage

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Abstract

African digital libraries have evolved beyond the ‘preservation or access’ debate of the 1990s, and the concomitant compulsion to (un-)systematically convert cultural heritage collections from analogue to digital formats. The challenge now lies in the agility to respond to user needs, to match the selection for digitisation with a more strategic approach towards research relevance and potential research outputs. This paper will examine the symbiotic relationship between preservation, cultural heritage and scholarship in a case study on the description and documentation of extinct African languages. It proposes that the new point of focus lies in digital scholarship, enabling both technical innovation and more intellectual engagement in revisiting the digital library to review, correct and augment transitory records through a new scholarly interpretation of African cultural heritage.

Keywords

African digital libraries, digital scholarship, African cultural heritage, digital humanities

Introduction

The digitisation of cultural heritage was embraced by the heritage sector in South Africa, comprising museums, libraries, galleries, archives and relevant departments of higher education institutions (HEIs) – as a deliberate act of social cohesion after the transition to democratic government in 1994. National collaborative projects such as DISA: Digital Innovation South Africa (2015) served as incubators for capacity building in making cultural heritage content accessible online (Peters and Pickover, 2001). However, the recommendations by Sula (2015) that cultural heritage institutions should do everything they can to

digitise material as quickly as possible, were never attainable in the developing world.

Instead, the intervening decades represent a period of intense reflection on the role of cultural heritage institutions to act not simply as storehouses of the memory of great men and women of the past, but increasingly to capture our stories as they are unfolding today. A recent student protest at the University of

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Cape Town (UCT), calling for the removal from the campus of a statue of Cecil John Rhodes, reminds us of the ongoing contestation surrounding public monuments and cultural symbols of a despised colonial heritage. Cultural heritage institutions in South Africa are challenged to reflect the multiple and often marginalised histories, heritages and collective memories of all its people. This challenge continues to demand an engagement in constructive and creative ways of mediating diverse and sometimes conflicting histories and traditions, and aligning contrasting memories with deep emotional attachments to historic and cultural events, figures and symbols.

Established in 1984, the IFLA Strategic Programme on Preservation and Conservation (PAC) (2015) follows the guiding principle that preservation is essential to the survival and development of culture and scholarship. Conversely, the use of new technologies is key to that act of preservation in drawing cultural heritage into the focus of scholarship to examine and revisit our story as it unfolds. The symbiotic relationship between preservation, cultural heritage and scholarship is framed in the role of the digital library at the University of Cape Town Libraries in leading the emerging field of digital scholarship.

Digital scholarship

Digital libraries in South Africa have seen uneven growth in scale from early grant-funded projects to institutionally based organisational units. The University of Cape Town Libraries has successfully traversed the divide from grant-funded project to internal programme through engaging the academic researcher in critical collaboration through digital scholarship programmes.

While libraries and archives feature significantly in the search for primary research sources, digital humanities researchers increasingly seek to assemble mixed competencies drawn from computer science, design, online publication, digital curation and library science. The digital library is particularly well suited to meeting the needs of digital scholarship by providing technical services across diverse disciplines, and thus facilitating dialogue; furthermore also in promoting ideals such as open access and digital preservation, and championing scholarly and pedagogical innovation. Lisa Shapiro (2011: 1) defines the scope of digital humanities in mediating diverse and sometimes conflicting histories and traditions, rather than technology for the sake of technology:

It can encompass a wide range of work, such as building digital collections, constructing geo-temporal visualizations, analyzing large collections of data, creating 3D

models, re-imagining scholarly communication, facilitating participatory scholarship, developing theoretical approaches to the artifacts of digital culture, practicing innovative digital pedagogy, and more.

Thanks to a new emphasis by funders on research data management, the role of the digital library now involves integrating data curation into digital scholarship, enabling a fluency with topics such as repositories, web publication and information-sharing practices, descriptive standards, metadata formats and the plethora of different file formats that characterise digital data. The digital library now encompasses conceptual frameworks for the nature of digital objects, types of metadata, data curation, for understanding collections management as curation, as well as for data sharing and its legal limitations. In transitioning the digital library from a reprographic service to a research partnership, and with the experience of projects such as the Westphal collection of non-Bantu click languages, we perceive the need to develop new collections stewardship policies, new collaborative governance structures and interactive workflows to guide digital librarians and data curators in working alongside researchers in the digital humanities.

In 2011, through the Vice Chancellor's strategic grant, Humanitec was established to address these divides. The project envisioned the creation of an institution-wide digital repository, to be used to (1) curate and showcase the many important collections of works of art, music, rare documents and other artifacts that are in the possession of the University, and (2) showcase the intellectual and scholarly activities of members of the academic staff. In doing this, the project aimed to connect UCT in important ways with scholars in other countries, by making important African collections available to them for study and by enhancing awareness of areas of research, expertise and collections at UCT.

Voices from the past: A case study of the Westphal collection

UCT Libraries Special Collections and Archives has an outstanding collection focusing on the African continent. Emphasis is placed on African imprints, collected in conjunction with material directly about Africa from other continents. The collection comprises holdings of 85,000 African Studies titles, including also pamphlets, current journals, rare books, an historical collection of maps, archival manuscripts, sound recordings, posters, and African film and photographic records.

The Westphal holdings in the UCT's Special Collections comprise some 200 audio tapes, handwritten field notes and sketch maps as well as unpublished manuscripts on indigenous languages of Southern Africa. Created by Ernst Westphal, Head of African Languages at UCT between 1962 and 1984, the Westphal sound files are precious because they include recordings of some languages which are no longer spoken and which have not been documented in greater detail.

In 2013–2014 two Humanitec grants supported the digitisation of the audio recordings of Southern Bantu and non-Bantu click languages which Westphal recorded in South Africa, Namibia, Botswana and Angola between the early 1960s and the beginning of the 1980s.

The project of study of the Westphal collections is led by Dr Matthias Brenzinger, Director of CALDi – Centre for African Language Diversity – and Head of Linguistics at UCT. One of his main interests lies in the documentation of African languages, especially those that are vanishing (Brenzinger, 1992, 2007). These studies have become one of the most vibrant fields in linguistics over the past two decades. Research on the actual speech and its variation has regained considerable recognition in academia. While theoretical, universalist approaches to the study of languages had dominated the discipline for almost half a century, scholars working on African languages always had a strong focus on language description and documentation. Linguistic analysis requires a thorough description and a language corpus, which does not exist for most African languages.

Ernst Westphal was a true pioneer in establishing the study of Southern African linguistics and has contributed significantly to our understanding of the non-Bantu click languages. Westphal rejected the term 'Khoisan' (Levin, 2015), as he claimed that the non-Bantu click languages spoken by former hunter-gatherers and some of the pastoralists in Southern Africa belong to several unrelated language families. Although currently discredited, Joseph Greenberg's postulation of the Khoisan language family was widely accepted at the time, while Westphal's rebuttal was ignored outside of South Africa (Westphal, 1964). Over the last 10 years, however, the findings from research on non-Bantu languages have produced evidence that in fact Westphal was right in rejecting the single family hypothesis for these languages (Güldemann, 2008).

The audio soundtracks digitised in this project include recordings of languages no longer spoken. Westphal recorded the last speakers of Kwadi, //Xegwi and N/amani, and his recordings of N/uu are equally precious as the last handful of remaining three

speakers are no longer fully competent in this language.

Westphal's audio files of Job (Jopi) Mabinda are of special importance. Mabinda spoke //Xegwi, one of the non-Bantu click languages of South Africa and was first recorded by Leonard Lanham and Desmond Hallows on a farm in the Lake Chrissie district (Mpumalanga Province) in 1954 (Lanham and Hallows, 1956a, 1956b). Accompanied by Hallows, Westphal worked with Mabinda in 1962, when the audio tapes in UCT's Westphal holding were recorded. Oswin Koehler, from the University of Cologne, Germany, visited Mabinda several times between 1967 and 1979, and audio recordings are believed to exist in the Koehler Archive at the University of Frankfurt. Professor Tony Traill, Chair of Linguistics at the University of the Witwatersrand and an authority on non-Bantu click languages, consulted Mabinda in the 1980s and worked with him on //Xegwi until 1988. According to Traill, most //Xegwi community members had abandoned their language and spoke isiZulu as mother tongue as far back as the 1950s. Job Mabinda, however, not only maintained a strong identity as a //Xegwi man, but retained a thorough knowledge of //Xegwi, of which he was the last speaker.

Kwadi used to be spoken at the southern coast of Angola and Westphal's recordings of the language in the 1970s were with the last, already by then semi-speakers. Very little is known about this language and the data that has now become available through the digitisation project might allow for a better understanding of the history of this language and the genetic relationships of its speakers. In 2014, the German linguist Anne-Maria Fehn conducted fieldwork in the area where Kwadi used to be spoken. When playing audio clips of Kwadi from the UCT Westphal holdings to elderly people who claimed to have Kwadi ancestors, some recalled words from the language they had heard when they were young.

These digitised language recordings not only enable researchers to analyse the language by applying present day technologies and theoretical frameworks, but also allow audio documents recorded some 50 years ago to be returned to family and community members of the recorded speakers. Furthermore the conversion from these reel-to-reel tapes to high resolution digital masters ensures the material will remain audible in perpetuity.

Evolution of metadata practice in response to digital scholarship

In 2012, UCT formally approved a Metadata and Information Architecture Policy, jointly owned by the

Information and Communications Technology Services and the UCT Libraries. The aim of this policy is to ensure that all content collections, both physical and digital, generated and managed by UCT have sufficient metadata that meets international standards and is consistently applied to ensure that the content is discoverable online. In 2013, the Metadata Working Group was established to implement the policy and provide metadata guidelines and assistance to content collection owners. One of the benefits of strategic institutional support has been the growing awareness across campus of the importance of assigning accurate metadata that meets international standards to content collections. The Humanitec project has afforded the Library, and specifically the librarians in the Cataloguing and Metadata Management Section, the opportunity to work closely with researchers and project owners in metadata creation. As a result, there is now collaboration between researchers, who with their subject expertise can create the metadata that best describes the collections, and librarians who ensure that international standards are applied consistently.

The creation of metadata for the digitised tapes of the Ernst Westphal collection presented unique challenges due to the highly specialised nature of the subject matter. Initial project work preceded the structured workflow initiated by the Humanitec project, as a result of which the creation of the metadata fell to librarians with no subject specialisation and was created from the physical object such as the tape box and not the actual tape. The limitations of this method became very obvious when the opportunity to work with specialists did arise in subsequent project phases.

These later phases were funded, allowing for the employment of linguistic specialists, who were able to listen to the tapes and correctly identify the languages spoken, as well as to follow the subject content of the discussions. In some instances, the identities of Westphal's interviewees were revealed. Therefore, beyond the essential level of descriptive metadata, these collaborations with researchers enabled further valuable enhancement opportunities.

With specialist input, greater consistency in the spelling of the languages could be achieved, in keeping with internationally accepted taxonomies. This often differed from the terminology used by Westphal to describe the content of the tape boxes. For example, he used the term *ŋhu* for the N|huki language; and *Yei* and *Yeyi* interchangeably. Other challenges where subject specialisation was essential lay in the identification of the special characters used by many of the non-Bantu click languages to indicate clicks. Some

of these characters are standard Latin ones, for example in ! Xuun, whereas others require the Charis SIL font to provide the additional characters, such as Ꞥaka-ŋjous.

In addition to ensuring consistency in spelling and terminology, metadata librarians provided additional value in adherence to international standards, including Dublin Core (unqualified) and Library of Congress subject headings. Further linguistic standards were also applied, including the codes developed by Malcolm Guthrie for the classification of the Bantu languages (Maho, 2009).

As mentioned above, Westphal himself was not always consistent in his spelling and terminology, and it was considered important to capture these idiosyncrasies in the metadata. Considerable value was added to the resource by capturing annotations reflected on the tape boxes to the description field. For example: Title on box: Kwisi words (Capelopopo).

The benefits of close engagement and collaboration between librarians with their expertise in the application of international standards and researchers with their extensive subject knowledge have resulted in very rich metadata which ensures that these rare and valuable recordings will be discoverable to future researchers.

The challenge of digitisation: Technical service or digital scholarship?

The linguistics scholar Matthias Brenzinger first consulted the Centre for Popular Memory at UCT on the digital preservation of a handful of field recordings from the 1960s on quarter-inch tape reels. At the time, the project presented a novel relief from the systematic digital preservation of several thousands of cassette tapes of oral history interviews. The project was later transferred to the Digitisation and Digital Services Section of the UCT Libraries, as the scholarly engagement was channelled through the Humanitec project.

An early challenge of digitisation was in sourcing a professional reel-to-reel recorder to add to the CPM's collection of legacy format playback equipment and have it serviced by a rare enthusiast, who proved to be very forward thinking in terms of backwards compatibility, and had been collecting disused equipment for many years. Once the new machine had been installed and a test run had been performed with a non-critical tape, the first originals from the Westphal collection arrived. As alluded to in the previous section, basic metadata had been provided by the Cataloguing and Metadata Section, with an accession number in small pencil lettering on each box and reel.

It was an exciting moment, threading the first end of tape onto the take-up reel, setting the audio software on the computer to start recording, and hitting play on the Revox. Would the old tape tear? What would we hear? Would we be able to capture the full audio spectrum adequately? From the very first tape, the clarity of the sound was astounding. The playback head was perfectly calibrated, with no need for adjusting the azimuth, and the tapes had obviously been stored correctly, showing no signs of stretching, brittleness, mould or excessive dust. But of course there were other interesting challenges. Westphal had recorded in mono, forwards and backwards. He had also quite regularly changed the speed at which he was recording, obviously trading off – whenever necessary – between higher quality (high speed, i.e. 7 ½) and more recording time (low speed, i.e. 3 ¾). In practice, this meant that during playback in stereo, one was listening to a cacophony of voices: some sounding backwards and/or pitched twice too high and fast or too low and slow, mixed with some at the right settings, via the left and right speakers respectively. Nevertheless, in order not to stress the tapes unnecessarily, it was decided to digitise the recordings as they were, capturing both channels at once in 24 bit/96 kHz, focusing only on keeping the signal going through the high-quality Lucid AD-converter trimmed as hot as possible without clipping. Thereafter, it was relatively easy to digitally split the dual-mono file, reverse the separate channels, change their speed and pitch, and export new, unfiltered derivative files. These would be almost indistinguishable from ones that would have necessitated a second recording process, i.e. rewinding the tape completely, turning the spool over, rethreading the tape and replaying it at whichever initial speed the first take suggests. From a digital asset management (DAM) point of view, this way of proceeding also meant that we were creating one single archival (.aif) audio file to match a single physical object in the Special Collections archive. Several more challenging details emerged in the digital scholarship engagement, some of which were purely mechanical, while others pertained to digital workflow and research data management (RDM) issues.

On the mechanical side, two to three tapes that contain more than the usual two (e.g. stereo or dual-mono) channels of audio were encountered. The reason for this, it was surmised, could be that Westphal used a different kind of field recorder (capable of simultaneously recording more than two tracks) to record onto these specific tapes, or it could mean that a misalignment of recording heads led to one channel (that was actually meant to be recorded over) remaining audible. This

issue remains to be addressed in future investigation. Another challenge lay in correcting inconsistent speed changes on certain recordings that Westphal made while the battery power supply of the field recorder was deep-draining, resulting in a gradual decrease of recording speed. It proved possible to achieve, but these enhancements on the derivatives were not as perfect as the general filtering and processing that was achievable in order to reduce tape hiss and rumbling wind. Lastly, there were also some reels with up to four separate sections of tape wound onto them, but without these necessarily being torn sections of the same recording. This necessarily led to the creation of distinct archival audio files, which became one of the subjects of consideration in data- and metadata management. In fact the biggest challenge for this collection of audio files was only to become entirely clear later: digitisation, digital storage and metadata creation and enhancement had taken place in four successive phases, leading to small inconsistencies in the file naming convention, for instance in the suffixes of derivatives.

An important part of the scholarly engagement identified by Douglas (2000) was the activity of listening itself, which in the context of audio-visual archiving tends often to be overlooked, between technological considerations on the one hand and academic outputs on the other. While the project did require high-resolution original audio files for linguistic analysis with specialised software, such as Praat, filtered derivatives were also created for maximum ‘naked ear’ usability, such as transcription and translation (Boersma and Weenink, 2001). This process of intense listening to these recordings revealed much more than non-Bantu click sounds – of course unintelligible to a non-expert – but many further impressions emerge. For example, an immensely charming interviewer’s voice (namely Westphal’s), speaking a large variety of languages himself, at times to a second translator in the room; ways of speaking with each other that always involve a rich palette of aural signals that apparently need no translation for any listener: empathic sounds, sounds of understanding, interest and also joy; a whole tape side of what may be young relatives of Westphal’s: two boys making up a radio play in the Queen’s English; documentary excerpts of ritualistic singing and drumming that were clearly just a small window into a musical event that stretched for days and nights; two young women singing what sounds like a nursery rhyme – an intricately interwoven polyphony of such startling beauty that one is almost reduced to tears. Suffice to say: there is always so much else contained in any recording however specific to a discipline its provenance may

be – details, backgrounds and ‘ways there’ that reach far beyond the immediate research interests of any academic project. Furthermore, with the passing of time the manners in which we can (and indeed need to) engage with these mediated events also change. In the case of the undeniable affective quality and fascinating layering of the Westphal recordings, one can only wish to provide them with more listeners, at the very least in appreciation of the cultural heritage they represent.

While there is no doubt that a high degree of specialisation is unavoidable in meeting the wide range of systemic demands that are put on digitisation and research data management, it is equally true that the very outputs of this work necessitate the more broadly skilled function of the digital curator. In order to create the kind of digital repositories that the digital library of the future requires, it becomes ever more necessary than in any traditional archival context for researchers to work in close collaboration with digital knowledge brokers: staff who can intelligently engage with their materials in order to provide a variety of relevant accessibility and interoperability solutions. The various digitised media formats can always be further interlinked and enriched. Recently, a small-scale, departmentally driven initiative to make reproduction photographs of Westphal’s handwriting on the tape boxes (and some reels) led to the creation of an auxiliary archive of visual material to complement the relevant audio files and text documents. Further efforts could include time-based anchoring of relevant transcripts, meta tags, commentaries and other hyperlinks on the audio files, perhaps via an interactive web-interface with specific access rights put in place for research experts and general audiences. In this sense, the future potential for the Westphal collection is to open it up to new audiences outside of its immediate field of specialisation, and to enable new ways of listening that will no doubt generate interdisciplinary insights into what its richly layered materials provide, in this case particularly to the African Humanities.

Conclusion

The case study mapped out in this article reminds us of the many and varied entanglements embedded in library collection items. These extend from the gathering and maintenance of collections in archival conditions, right through to engagement and access of the derivatives by researchers and community users, and back again to the metadata enhancement within the archive after such specialist interactions.

The engagement of the linguistic experts and librarians in the process of metadata creation speaks to the intellectual process of revisiting the library to review, correct and augment the transitory record in a new scholarly interpretation of African cultural heritage.

Through the digitisation of old tapes the derivative digital files can be taken back to the relevant first language speakers and their communities for further interpretation or corrections, and these enhancements then fed back into the bibliographic record. The high quality digital master can also be played over and over by the linguistic specialists for further analysis, which is also fed back into the bibliographic record. Both these levels of enhancement are neither bound by the physical location of the original collection nor by the fragile nature of the original recording.

These enhancements go further than merely a richer articulation of materials in the library. The added value in the specialist interactions of first language speakers, linguistic specialists and librarians enable deeper (and broader) research to be generated out of the material, this can then be digitally curated creating virtual portals of related material.

As archivist Barbara Craig (2002) reminds us, compared to a long history of inquiry into memory, discussions of its specific manifestations in archives are recent, and much of the discussion is by people with no first-hand experience with archival work. In many ways, archives and libraries of the 21st century represent cross-sectors of societies. They often intersect around issues/themes rather than institutions, around the visceral rather than just the physical.

Such engagement in the library is imperative to the building of collections that resonate with the environments from which they originate and add value to the research that extends from use of such material. As such, libraries play a role in ensuring that the legacies we hold are not only preserved behind physical (and virtual) walls, but also curated and disseminated beyond the boundaries within which we work. Though the advancement of digital and interactive media technologies, and the innovative collaborations of academic research, the symbiotic relationship between preservation, cultural heritage and scholarship has defined the emerging role of the digital library in a synchronic circle of re-inscription of African cultural heritage.

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References

- Boersma P and Weenink D (2001) *Praat, a System for Doing Phonetics by Computer*. Available at: <http://www.fon.hum.uva.nl/praat/> (accessed 24 August 2015).
- Brenzinger M (ed.) (1992) *Language Death: Factual and Theoretical Explorations with Special Reference to East Africa*. Berlin: Walter de Gruyter.
- Brenzinger M (2007) *Language Diversity Endangered*. Berlin: Walter de Gruyter.
- Craig B (2002) Selected themes in the literature on memory and their pertinence to archives. *American Archivist* 65(2): 276–289.
- DISA (2015) *DISA: Digital Innovation South Africa*. Available at: <http://www.disa.ukzn.ac.za/> (accessed 24 August 2015).
- Douglas K (2000) Digital archiving in the context of cultural change. *Serials Review* 26(3): 55–59.
- Güldemann T (2008) Greenberg's 'case' for Khoisan: The morphological evidence. In: Ibrizimow D (ed.) *Problems of Linguistic-Historical Reconstruction in Africa*. Köln: Rüdiger Köppe, pp. 123–153.
- IFLA (2015) *Strategic Programme on Preservation and Conservation (PAC)*. Available at: <http://www.ifla.org/about-pac> (accessed 24 August 2015).]
- Lanham LW and Hallows DP (1956a) Linguistic relationships and contacts expressed in the vocabulary of Eastern Bushman. *African Studies* 15(1): 45–48.
- Lanham LW and Hallows DP (1956b) An outline of the structure of Eastern Bushman. *African Studies* 15(3): 97–118.
- Levin A (2015) *The Khoisan*. Available at: <http://www.khoisan.org/> (accessed 24 August 2015).
- Maho JF (2009) *NUGL Online: The Online Version of the New Updated Guthrie List, a Referential Classification of the Bantu Languages*. Available at: goto.glocalnet.net/mahopapers/nuglonline.pdf (accessed 20 March 2012).
- Peters D and Pickover M (2001) Insights of an African model for digital library development. *D-Lib Magazine* 7(11): 1082–9873.
- Shapiro L (2011) Getting started in digital humanities. *Journal of Digital Humanities* 1(1). Available at: <http://journalofdigitalhumanities.org/1-1/> (accessed 17 August 2015).
- Sula CA (2015) Digital humanities and digital cultural heritage (alt-history and future directions). In: Ruthven Chowdhury I and GG (eds) *Cultural Heritage Information: Access and Management*. London: Facet, pp. 13–36.
- Westphal E (1964) The Languages of Africa, by Joseph H Greenberg. *American Anthropologist* 66(6): 1446–1449.

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Storing and sharing wisdom and traditional knowledge in the library

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Abstract

Traditional library practice focuses on print collections and developing collections of materials that have been published, which means the documents have gone through some kind of review or vetting process. This practice leaves a wide swath of potential knowledge out of the collection. For example, indigenous knowledge, beliefs, and experience are different, in that they do not undergo the same review or vetting process; we might refer to these types of content as wisdom. Non-print collections, such as collections of recorded oral histories, represent less traditional forms of knowledge. Human libraries push the boundaries further in the quest to integrate wisdom and lived experience into library collections. This paper delineates the relationship between wisdom and knowledge that arose during a phenomenological study of the everyday information practices of Kenyan university women. The women were asked to photograph everyday events from their life and describe what they saw. One finding was a divergent presentation of wisdom and knowledge. Because the women were describing this in relation to their education, we assert that this demonstrates a need to reconsider positivist assumptions in library science, bringing what the women called wisdom into the stacks. How, though, can wisdom be stored and shared?

Keywords

Wisdom, knowledge, oral history, living libraries, traditional knowledge

Introduction

How can libraries store the information that its users need when that information takes a non-traditional, changeable, or living form? There are certainly many kinds of knowledge that are not textual or that fall outside of the realm of regular library collection practices. Traditional knowledge falls into this category. This paper explores possibilities of expanding limits of texts and knowledge in the library stacks.

Libraries serve to connect people to the information that they need, which might include a wide range of material such as fiction, nonfiction, or persuasive literature; “information needs” are therefore quite subjective. Librarians work within boundaries that have been established by practice and practicality formed by the types of documents that they house. Librarians are bounded by space, scope of the collection (what is available and desirable), and limitations on form (i.e. books, periodicals, audio-visual items).

We can also see how ‘normal library practice’ is changing drastically in all of these areas, especially as digital technologies have changed space usage, limitations on knowledge, and form that the knowledge takes. These changes have come about directly and indirectly as a result of technology. For instance, reference areas have been largely reconfigured into “commons areas” where people can meet with laptops, and the spaces of libraries have been reconfigured because of users’ technology needs (Morrone and Workman, 2014; Turner et al., 2013).

While library spaces have been reconfigured, space is certainly still very much a practical limitation.

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Librarians continually negotiate and reconfigure spaces in the library for the various objects and activities that they want to and are expected to include in the library: periodicals, reference collections, book stacks, computer areas, and meeting spaces. The areas of a library still define its various purposes, though commons areas are designed to be much more fluid, ensuring that users have the ability to move chairs, tables, etc. according to their needs.

Several authors have explained that librarians run into limitations on which texts that they include in the library's collection. They work within established parameters of knowledge and form. Budd (2002: 93) points out that knowledge "has been subjected to some kind of filtering through society's value system . . . has been deemed meaningful through some socially agreed-upon process." Radford (1992) critically explains that librarians serve as facilitators, guardians, and brokers of a modern, positivist view of knowledge; here, information is presented as a commodity. This viewpoint lays the groundwork for analyzing the limits of library collections in terms of value. We can say that library practices and research give precedence (and possibly privilege, though that might insinuate a deliberate exclusion) to texts or to graphic records that can be easily stored, understood, and analyzed for content. Collections of textual and visual documents are the physical components of "normal library practice" (with texts being most usual). This leads us to the conclusion that normal library practice, by definition, marginalizes some kinds of information, such as communication between people – libraries do not typically organize unrecorded communication. They might organize space where communication (between books and people, between computers and people, between people and people) will occur, but they do not organize people. That falls outside of the scope of librarianship. People embody living knowledge, but are much more difficult to organize, store, and disseminate; that differentiation marks "alternative views of knowledge" that the librarian community could give serious consideration, were it not for the practical problems posed by actually carrying it out.

Another barrier to connecting the reader to the information sought is the method used by librarians to obtain books, including limitations of the publishing industry. The 'normal' method for libraries to obtain texts is through publishers, jobbers, and small presses; that is how they fill the shelves. Librarians select from catalogs of books to meet the scholarly and/or recreational needs of their patrons. However, the publishing industry censors itself. Publishers publish what is publishable: that which has been vetted, is

acceptable, and salable. This means that certain kinds of knowledge will make it through the publishing process, and other kinds will not. This might be considered a product of market forces, or, more ominously, censorship. For instance, Durrani (2008) writes about librarianship in Kenya during the 1980s, and distinguishes between the publications that were on the library shelves and the underground literature of liberation. Liberation literature was censored by the government and so was unavailable in public libraries except through what he calls "guerilla librarianship."

Information suppression is linked to discussions of traditional knowledge (TK), which claims that local knowledge is often superior in finding solutions to local problems. TK presents a calling for librarians to expand the information ecosphere and somehow recognize the value of wisdom and experience. A roadblock, though, is that some of that local information is not actually written down; "normal library practices" focus on texts. There is a lot of wisdom that is not found in the library stacks. Finding a way to include this into the library's collection is not only a way to connect library users to the information that they are seeking, but also an act of guerilla librarianship. It liberates knowledge and can connect users to TK.

Because librarians concentrate their efforts on developing collections of texts (or at least recorded material), it makes sense to define a text, explore textual boundaries, and identify how expanding the collection might enhance a library user's access to information. Ricoeur (1991) offers one way to think about this by describing how people interact with information in dialog or conversation. He defines text as "every utterance or set of utterances fixed by writing" (p. 135). In dialog, two people are engaged in mutual discourse; they are rooted in a present reality and have the opportunity to negotiate meanings. That exchange offers a psychological advantage that the written text cannot share. Written texts, though, offer a sociological advantage over conversation. Texts are fixed in time, can be preserved and studied. Written texts can become part of the collective memory (p. 137), but they are located in a quasi-world where reality is "intercepted" (p. 138). Similarly, traditional reading theory has put the reader as recipient of knowledge (the reader as "empty vessel"); however, more modern reading theory has put the reader in command through interpretation. Thus, reading a text might be a two-way or intersubjective experience, but Ricoeur explains that it should never be confused with speech itself (p. 146). Likewise, the reader can never leave an imprint on the text for the next reader without

writing in the book, which is highly discouraged in libraries (although social tagging the catalog might be an exception worth noting). Written texts are only one form of communication – they are essentially one-way or limiting because the speaker (the writer) can never clarify for the reader what he is saying should there be questions (although journal clubs and written interpretations offer the reader a way to engage with the text in the presence of another). Alone, the reader has limited options for interpretation. Providing a way for the seeker of information to interact personally with the person who holds that information, then, can be seen as an important step in increasing understanding and knowledge, and helping people find what they are looking for.

When is a text not a text?

Budd (1995: 307) claims that “if text can be taken as a formally constructed system of signs, then many things, and certainly libraries, qualify as texts.” Budd’s interpretation is influenced, in part, by Brown’s (1987) view of society as text, as a social structural system of speech acts, acts that can be reproduced, interpreted, and reinterpreted. Each individual has the power to analyze and act upon this text, first through interpretation and then using their own experiences to reinterpret. Turner (2012) explains that even an individual utterance can be a document. Turner refers to Frohmann (2004: 387) who defined documents according to either “their materiality; their institutional sites; the ways in which they are socially disciplined; and their historical contingency;” they are both socially constructed and contextual. Turner, studying institutional communication, found that oral statements should be considered documents because an utterance is “an artifact that conveys evidence” (2012: 860). Thus, even utterances are something that should be of interest to documentarians and librarians.

Defining knowledge and wisdom

During the study that is described in this paper, Kenyan university women distinguished between *knowledge*, which they said is stored in books and libraries, and *wisdom*, which they associated with people, especially elders. The first objective, then, in explaining “wisdom” as an alternate path to knowledge is in establishing the relationship between knowledge and wisdom. One way to conceive of their relationship is as a hierarchy. Haeckel and Nolan (1993) have proposed a multi-level information hierarchy of variables and processes by which information becomes knowledge. *Facts*, at the base of the hierarchy, become *information* given a particular

context. Information becomes *intelligence* through *inference*. *Certitude* transforms intelligence into *knowledge*. Finally, knowledge becomes *wisdom* through the process of *synthesis*. Arguably, the moments of distinction are just as vague as the states themselves. However, the tendency to place knowledge as antecedent to wisdom is common.

In an effort to develop an explicit theory of wisdom to explain why people are labeled wise rather than knowledgeable, intelligent, or creative, Sternberg (1990) has also found that knowledge precedes wisdom. He has not operationally defined knowledge but alludes to knowledge as, simply, what is known. In this case, knowledge is rooted in the positivist tradition and is transferable and, for example, written in books and passed along in schools. Bluck and Gluck (2005) have described wisdom as something that necessitates transmitted knowledge but also requires demonstration or possession of a wider set of what they call life-tools, such as empathy, support, self-determination and assertion. Also linking values to wisdom is Kekes (1983), who has defined wisdom as “a character-trait intimately connected with self-direction... [and] the possession of wisdom shows itself in reliable, sound, reasonable, in a word, good, judgment” (p. 277). In other words, wisdom is the manifestation of value-mediated and reasonable judgment. Such judgment, including an understanding of differences in values and priorities, is culturally based and necessarily relies upon the mastery of various social and institutionalized norms and beliefs.

The role that experience and expertise play in wisdom has also been explored. Rowley (2009: 110) claims that “knowledge, experience and action are key aspects of wisdom.” Similarly, Baltes and Smith (1990: 87) have explained wisdom as “an expert knowledge system”, or expertise. They have defined wisdom as “a highly developed body of factual and procedural knowledge and judgment dealing with what we call the ‘fundamental pragmatics of life’” (p. 87).

Importantly, many studies of wisdom extend beyond educational settings. As Baltes and Smith (1990: 93) have suggested, in studies of wisdom and intelligence, the “primary focus on school-related knowledge and skills has been questioned, and new sectors of life ... have been singled out as domains within which factual and procedural forms of intelligence can be properly studied.” Bodies of knowledge outside the sets of core curricula such as “the knowledge of everyday routines (e.g. knowledge of common activities and events, social norms, available human services, and social institutions)” (p. 97) come into play during the everyday pragmatics of life.

Lloyd (2009) has also studied information practices beyond the academic setting, specifically in emergency response situations. She has found that written knowledge is only one source of information. Crisis responders also rely on social sources of information, such as experts in their field, and also on environmental cues.

Another aspect of wisdom is that it enables people to function in a state of uncertainty. Baltes and Smith (1990) have suggested that experts have not only knowledge of their domain but also knowledge of how to manage uncertainty, such as being aware of probabilities or the relative success or failure of relevant decisions. This tolerance of uncertainty is what Bluck and Gluck (2005) have called flexibility.

Wisdom might be conceived of as a component of tradition, or as a means to bolster traditional social systems. Wisdom is a type of learned judgment that comes from and complements the social system of which a person is part. This presents a structuralist-functional view on the purpose of wisdom; people who learn how to become a functional part of society are thought of as wise.

Howard (1994) has stressed the importance of conversation between people involved with western development, coming in as technical experts, and the people who live in that nation's traditional society. The "quick fixes" imposed upon the traditional society are a reflection of a western knowledge system, and the process of development is imbalanced, favoring the developed nation as expert. Howard explains that "the legitimacy of the authority of the technical experts is based on the assumption of the superiority of science" (para. 7). Science is presented as an "objective, impersonal, rational, and universal knowledge system" (para. 7). There are many advantages to having scientists and developers who have adopted some degree of humility, and who recognize the legitimacy of local or traditional knowledge; people who know the land and understand the intricate balance of their ecology are a source of real knowledge.

Western bias, colonialism, and positivism

There are different views on the value of traditional knowledge and how it might work in modern society. Outside of science and development, education and access to information, and laws (as representations of wisdom) demonstrate tensions that might arise.

Many librarians have noted that students from other countries do not have the same conception of the library as domestic students. Northern or western hemisphere libraries have different traditions from southern and eastern hemisphere libraries. In some

areas of the world, libraries are only available to scholars. The materials might be available only in the dominant language, as relics, reminders, and reinforcements of a colonial system. In the least developed areas of the world, people who hold the most power, the tribal elders, might be marked not by knowledge that is learned in books at all, but by their ability to make good judgments based on wisdom, of knowing stories, and having life experience. We might say that in the West, book knowledge is privileged over life experience. One of the relics of colonialism is the tendency to discount non-textual knowledge. We can say, therefore, that books hold more power in western societies than they do in societies with a strong oral tradition. While we will not argue here that books are oppressive, there is a long line of thinking that books have the capacity to destroy the capabilities of memory; in western tradition, this was found in Socrates' conversations with Plato, though his second-generation student (Aristotle) wrote books and even established a library.

What are the results of establishing western-style education, imposing a western tradition of learning from books on non-western societies? What might that mean for the self-determination of a nation with different values and processes of legitimation and authority? Falgout (1992) described a case of the social effects of implementing a standardized American schooling system in Pohnpei, one of four municipalities in an island nation of the Federated States of Micronesia. Rewards for completion were "primarily Western ones—jobs, money, and manufactured goods" (p. 39). The coeducational system improved women's workforce prospects, but the new academic rites of passage also unintentionally shifted sociopolitical relations between "new elite" and the old (p. 40). The western democratic ideal of equality upended traditional norms in both well-received and problematic ways (depending on who was asked and how those consequences are weighed). In this case study, the intended state of knowledge and, perhaps, wisdom (i.e. democracy) were significantly different from the actual outcome.

Similar cultural clashes occur in the United States, where similar problems or ethical questions have been raised involving Native Americans and religious people who want to remain faithful to tradition-based laws. The Indian Civil Rights Act (1968) established that United States courts have no jurisprudence in tribal decisions. One tribal practice is banishment, described by Swift (2011: 943) as "an ancient punishment used by tribes to preserve order and rehabilitate tribal members ... [which] helped maintain tribal cohesion, essential to cultural identity and protection." There

have been appeals to US courts, though, from banished members, illustrating the difficulty in maintaining a distinction between tribal and federal jurisdictions. Similarly, Wolfe (2006) has described the sovereignty of faith-based laws and religious courts' relationship with secular (i.e. US and Canadian) courts. Wolfe claims that most of the time the courts have been happy to let religious courts carry out their own arbitration because self-regulation has been good for the courts. It has lightened their load, and it has been good for the people, who have been more comfortable having their disputes resolved according to their religious values. However, in-group cultural disputes might cross jurisdictions. Wolfe (2006: 456) explains, "many cultural groups wish to preserve their distinctive cultures and resist 'state-promoted assimilation'." The tension occurs when state dominance interferes with religious values; however, sometimes, traditional practices violate human rights, or in-group disagreements call for state intervention.

The two disparate views of colonialism and control (or suppression) of non-western knowledge in knowledge institutions are brought to the library discussion in Durrani (2008, 2014). Durrani describes how, in Kenya's post-colonial society, the English established libraries and the educational system in order to maintain some modicum of control over the people. In the 1980s, activists managed to establish their own libraries for liberation purposes (Durrani, 2014); they incorporated theater and art spaces into the library as a form of engagement, and also as a method of resistance. Have people in post-colonial nations managed to wrest control over the educational system from the oppressors now that they are in charge of libraries and education? Is there still a dichotomy in relation to books, education, and libraries that stands between western culture and non-western culture? What does globalization mean for traditional knowledge, and what do young people who live in societies that are transitioning into an interconnected, globalized society think about the difference?

This paper discusses how knowledge and wisdom were described by a group of women in Kenya, a country that has moved beyond its colonial past, but also one in which many worlds exist simultaneously. In Kenya, tribal and indigenous knowledge exists alongside schools built on western traditions. How can these two be effectively embodied within the context of the library? The women's comments about the concepts of knowledge and wisdom prompted the question regarding the place of libraries and, ultimately, what a library is and what it does. This brings up a discussion about how knowledge and wisdom are perceived, in what context each concept is used, and

how each is accessed and shared. Aside from the theoretical interest in such delineations, the findings and discussions provide credence to human libraries and other non-traditional or developing conceptualizations of the library.

Methodology

Data was gathered during a larger qualitative study about what information people describe as relevant to their everyday lives. A combination of content, phenomenological, and hermeneutical methods were used to explore Kenyan women university students' interactions with information in their everyday life. Basic content analysis was used to gain an understanding of the occurrence and co-occurrence of words. The relationship among words and how participants experienced these concepts was explored using Hycner's (1985) 15-step phenomenological method. Finally, a hermeneutic method inspired by Gadamer (2006) was used to understand the sociocultural and historical context of experiences.

The study focused on women's information practices, which is the set of institutionalized, or recurrent, information-related activities (i.e. seeking, searching, use, evaluation, production, and sharing) of a particular group or community (Savolainen, 2007). In an information practice, the unit of analysis is the individual-with-context. This can be contrasted with information behavior research in which the unit of analysis is the person, regardless of context. The value of this interpretive approach (compared to a more positivist approach) is that it takes into consideration information activities as they are embedded in a greater social, cultural, and historical context.

Context, in this case, is related to what knowledge is possible. In a Foucauldian sense, knowledge is more akin to a system in which claims makes sense, or not (Foucault, 1972). The organizing factor is discourse, or a certain way of knowing and the validating statements and claims that make knowing possible. Looking at the discourse makes it possible to understand how and why information activities, rather than individual behavior, are legitimized and gain value.

Method

Participants in this study included 20 women, aged 18–24, who were students at a private university in Nairobi, Kenya. Eight tribes were represented, and all but one identified as Christian.

Over the span of eight weeks, participants were asked to photograph objects they deemed relevant to their everyday life, write a description of what they intended to capture in the photograph, and then meet

in a group to discuss why the object in the photograph was relevant to their everyday life.

Data included participants' spoken words during group discussion, participants' written descriptions of their photographs, and participants' collection of photographs. A total of 745 principal documents were collected, including 250 corresponding photographs, 244 written descriptions, and 251 transcribed group discussions. Only written and transcribed documents were coded for content analysis. Additional clarification was collected through face-to-face interviews, informal interactions with participants and non-participants, and through researching local events, places, and objects to which participants referred.

Importantly, participants were not asked to talk about either knowledge or wisdom, but these concepts emerged as relevant in their everyday lives. Twenty-three documents, including seven photographs, 11 written descriptions, and five discussions, were collected that specifically pertained to and were coded as knowledge. Five documents, including two written descriptions and three discussions, explicitly addressed their conceptions of wisdom.

Findings

The students expressed a distinct difference between wisdom and knowledge. When discussing everyday life events and sources of information, participants discussed knowledge as it related to the education setting. In contrast, wisdom was related to life experience.

On knowledge

Students associated knowledge with education. Knowledge was experienced in their identity role as a student 92% of the time and was expressed as a thing gained through going to school, going to class, and learning in class. For example, one participant explained that she was:

doing classes that are teaching me about my own country which I didn't know at all. And, I'm gaining new knowledge and loving it.

Knowledge was associated with the classroom, "a place where you can gain knowledge, discover yourself, and learn new things." They spoke of school as the place where one acquires knowledge for empowerment and preparation for the future. For example, one woman said:

I believe ... all the schools I've gone to have contributed to my knowledge. They might not be directly but

through the education. Through wanting to gain knowledge. Through the education I have received I have managed to turn most of it into valuable knowledge that I am using in my everyday life.

They said that knowledge was something that was transmitted from the institution of the school.

The library was important for the students as a place to do schoolwork and as having "all the knowledge you want." In some cases the women also associated knowledge with culture, as a result of the diversity experienced by going to the university and by integration of cultural topics into the curriculum. Books were described as "full of knowledge" or as comprising a "shelf of knowledge." Another student said that books actually "represent knowledge" and "without them you can get no education."

Expert knowledge was also identified. For example, people who actually *worked* in their field of study were described as having expert knowledge. This type of knowledge, which was similar to wisdom, was based on direct and active involvement in the topic of knowledge and had an affective (i.e. motivational, inspirational) impact.

On wisdom

In contrast, the women connected wisdom to connections with elders and religious institutions. They associated wisdom with life experience. They said that elders were wise regarding tradition, normative issues, and money because they had life experience. One student described her parents as sources of both knowledge and wisdom, saying that they are:

very important sources of knowledge and information and ... they're like the wisest people on earth. Even though ... everyone says that we always repeat our parents' mistakes ... I guess that whatever, that I kind of ... learned through them so I don't have to fully repeat them.

Another woman said that it is through people, not books, that she has learned the most:

you know how people say books are knowledge but I tend to believe people have more knowledge than books ... There were these guys from several departments of the UN who talked about poverty and HIV ... And, some of this material you don't usually get in books. You get it from the people and it has ... more impact on you when you hear it from somebody else than when we read it in our books.

Another woman said that the Bible was a source of wisdom because of the stories about the people who

went through difficult situations and solved problems. Of course, the Bible is a book; however, she emphasizes the personal connection to the characters in the Bible as a source of strength:

When I read it, it gives me wisdom [and new understanding] because we all need wisdom in whatever we do, in every decision we make . . . the Bible encourages me whenever I feel that a situation is hard for me . . . So many people in the Bible have gone through hard things. But, they have overcome them they have overcome them and gotten solutions to different impossible things. So, my Bible is my guiding thing, and I respect the Bible.

Protocol or ritual played a role in sharing wisdom. For example, one woman discussed how rituals and the accompanying symbols during church service were central to gaining wisdom. The Bible, the only text-based source of information related to wisdom apart from biblical inscriptions on church walls, was integrated into church protocol, in which the vested authorities would read or lead readings from the Bible, and the house of worship was filled with various symbols of their faith.

In these cases, wisdom was contained in stories and based on people's lived experiences, while knowledge was found in books or related to education. Furthermore, knowledge was usually given; it was unidirectional. Wisdom required much more situational interpretation. Knowledge and wisdom overlapped in the domain of what can be called expert knowledge. This type of knowledge was related to the student's area of study in school, but it was different because it was based on the expert's lived experience and shared face-to-face.

The relevance of stories in wisdom is not a surprising link. For example, Pellowski (1990) explains how storytelling is universal and used as a way to entertain, transmit culture, and make sense of the world. Myths, stories, and proverbs, therefore, are embodiments or packages of shared cultural knowledge, but they might require situational interpretation. For example, in Buddhist and Hindu cultures, storytelling was used to transmit knowledge and wisdom and was even seen as superior to other forms of communication. Mbiti (1970: 2) explains that in many African societies, philosophies are "found in the religions, proverbs, oral traditions, ethics and morals of the society concerned." He goes on to explain the unique value of proverbs, which are distinct from other traditions in that in that "their philosophical content is mainly situational" (p. 2). The power of myths is in their orality, in ritual retelling.

Discussion

The critical thinking skills taught in school as a part of a positivist tradition are certainly important for global participation and development, but they do not necessarily lead to situational or cultural competency. Wisdom, enacted through experience, requires flexibility for situational variability. Knowledge stored and shared in books and facilitated by trained professionals is an integral aspect of understanding. Knowledge stored and shared in this way can be measured, recorded, and compared for future reference. The practice of wisdom is stored in the individual and shared through time-binding but flexible containers that cannot be measured, recorded, and compared in the same way. Wisdom cannot be standardized like positivistic knowledge, but that is precisely what is lacking in the knowledge society.

Findings support the idea that wisdom is a practical approach to life that is both situational and requiring action. In this study, life experience was an indicator of wisdom. For instance, parents were referred to as wise, giving their daughter the ability to learn from their past mistakes. This confirms Rowley's (2009) claims regarding experience and action as important aspects of wisdom. However, the student also suggests that the benefits of wisdom can be passed on. Because the receiver cannot possibly relive the same experience, such an acquisition would be an intentional and reflexive activity made relevant to current situational conditions.

Knowledge and wisdom were mentioned in different contexts, suggesting an implicit divergence between the two concepts. "Wisdom" points toward everyday life rather than the school setting, confirming Baltes and Smith's (1990) suggestion that wisdom is comprised of bodies of knowledge pertinent to sectors of life other than school.

Participants did not denote a hierarchical relationship between knowledge and wisdom that would directly support the theoretical definitions given by Haeckel and Nolan (as cited in Eisenberg et al., 2004) and Sternberg (1990); Sternberg and Jordon, 2005). However, the findings from this small sample of indicators do not necessarily negate such a relationship.

Bluck and Gluck (2005: 99) found that "people are perceived as wise when they have helped others to solve a problem in a way that went beyond what they had been able to see and do before", which was also found in this study. Age was certainly associated with wisdom. Most people who were identified as "wise" were older than the students, though one student described looking up to her little brother because of his ability to achieve goals. (She emphasized how

strange that was because she was his elder.) When people are able to meet their goals, it indicates a certain wisdom, or lifespan contextualism. While she was not speaking of wisdom in this situation, findings support Bluck and Gluck's idea that perceived wisdom might be more about age groups than just age.

One participant confirmed this when she discussed how the Bible imparted wisdom; its characters faced challenges, and she used those as lessons in her own life. She both read the Bible and listened to it, and explained that both of those experiences helped her understand the meaning of the text. She used the stories as instruction in her own life, which is an intentional and reflexive act. The text is the container of the words, but the reading and interpretation by the preacher or rector helped her understand the meaning of the text; thus, the text was embodied by the interpreter. So while learning from other people's life experience is an important aspect of wisdom, there are protocols that facilitate wisdom, especially through ritual. The ritual and the interpretation legitimizes and deepens understanding of the message. Schmit (2002) described how various ritual expressions such as gestures, repetition, rhythm, and music, in religion give legitimacy to texts, claiming that "elements of ritual are symbols that speak in ways discourse cannot" (p. 142). The idea of ritual language, beyond discourse, is that it "wholly involves us" (p. 133). In other words, interpersonal acts can be more powerful than books: that is to say, this supports the knowledge-wisdom hierarchy. Information is at the lowest level, below interpersonal communication, and embodied in ritual, which leads to action (or embodied wisdom). Is it possible to facilitate this in the stacks of the library, or are libraries simply storehouses for dead words?

Brophy (2000) describes the new library as a hybrid – a shift from the traditional library of the past that housed printed matter, to a new library that facilitates learning by push technologies (pushing electronic documents to users). Recent reconceptions of the library, though, as a community center or as a learning commons, point toward yet another type of library, or another hybrid. This is the library that recognizes people as containers of knowledge or wisdom. Co-production and cross-disciplinarity have become buzzwords in academia; the lone scholar toiling away with books is no longer the norm. Likewise, group assignments are more common, and libraries have responded with more group workspace (Steiner and Holley, 2009) in order to provide students with the print and online resources that they need. The library has also been reconceptualized as a place for production – of video, of writing. Another interesting manifestation of the concepts of "library as space" is

the human library, in which people are "checked out" for library use – becoming a non-recorded human source for information (Malin, 2012). The fact that it is not recorded is a difficult hurdle for inclusion in libraries: that person is not a text.

The large university where the current study took place offers a glimpse into the difference between young women's conceptions of wisdom and knowledge, especially their view of knowledge in an education setting and the library, which houses graphic documents. Is there a way to house wisdom, as well, in the library? Hendon (2000) has explored the relationship between the storage of material objects and a community's social and moral practices. She has suggested that communities develop an "ethic of storage" that "varies in conjunction with the need to define and validate social status, reflecting how people in different kinds of society interpret social relations and enact social values" (p. 45). Essentially, storage practices "raise issues of secrecy, memory, prestige, and knowledge" and provide insight into what a society values. Storage practices might manifest in a variety of ways. For example, accumulation of certain material objects might represent status. Physical location of material objects might have social significance. An actual person might also be a container of knowledge and, in such a case, might be spatially or materially identified. Studying sources of wisdom and incorporating traditional storage values into the library's collection provides a bridge between wisdom and knowledge and creates possibilities for a richer and deeper ethic of storage. It validates a wider range of knowledge and potentially gives students a way to conceive of how other paths of knowing.

The women said that when something was written in a book, it was true. They also said, though, that things their teacher said were true. Their expression of "truth" relates to the idea that what we know, or what we respect, is found in books – that there is a definite way of knowing that can be found "in the stacks" through the lens of positivism. While this is not inherently problematic, their education would be enriched by looking toward grandparents and others who are outside of the center of these institutionalized paths to knowledge. However, such inclusion forces librarians, as well as students, to rethink authority – to expand their conception of truth, to provide academic legitimacy to that wisdom of lived experience.

Implications and recommendations

Libraries have been positioned, culturally and socially, to store and allow for potential sharing of

both knowledge and wisdom. The place itself is dynamic and growing; the library is more than a place of storage, it is one for creation and community interaction. The “Library as Place” movement or the growth of academic commons within libraries is testament to this evolving role of libraries, especially on the university campus. Rethinking the role of libraries as information providers, in terms of what they provide, is compelling; it is relatively easy for libraries to collect printed materials, and convenient for students to access them. It might be more difficult for students to access people, especially elders or people who are outside of their social circle. We are often limited in our interactions to people in our various social circles, so providing access to people outside of those circles gives researchers a way to access knowledge that is not in books, and that is outside of their social circles. We can imagine that in countries that have experienced war or social upheaval or where there are strict social divisions this connection could be especially helpful in academics, from medicine and law to the social sciences.

In this section, we describe human libraries, oral history, and narrative interviews in order to reimagine how these might be incorporated into a university library setting. Human libraries show us a way to deconstruct the legitimacy of power and status manifested in static containers “in the stacks”. The interplay between people in conversation is truly a subjective event. We do not propose to replace recorded information with human libraries, but to supplement it with voices that have not yet been recorded, to find ways to let students interact with tribal elders under the same roof (mental and physical) along with books and traditional academic sources. This gives them an opportunity to actually access wisdom, and in turn increase their understanding of why people act as they do, to understand socially embedded actions and reactions, and to use that wisdom to enrich their understanding of how to act in the world.

Human or living libraries

Situational knowledge or awareness is something that human libraries epitomize. They represent knowledge that is embodied in interaction rather than that which is fixed in print. This is not to imply that print is “dead”, but rather that some elements of interaction are missing when the message is mediated. Print allows people to temper or to strengthen arguments, and they are presented as a complete idea. Interaction, on the other hand, gives both sides a chance to clarify ideas and respond to questions.

The first official human library appeared in Denmark in 2000, at a Stop the Violence festival. The idea quickly spread to Hungary, Norway, Iceland, Sweden, Finland, and into the rest of Europe (Human Library Organization, 2012). Abergel (2005) has helped establish living libraries across Europe to help break stereotypes and sensitize people to various issues. Now, the concept is alive and thriving in North America, Australia, Asia, and South America – within libraries, on campuses (University of Missouri, 2015) and even within companies (Aaker and Hammond, 2012). The trend has recently been introduced in South Africa. In a human library, originally called a living library, the concept of a book is expanded to pertain to a human, usually a person with a particular story to tell or exemplifying a social stigma; it is a tool for combating stereotypes. A patron checks out a human book in a similar fashion to other documents. The concept has been successful in facilitating important discussion in areas with diverse populations where stereotypes and prejudices prevent cohesion and to extend the opportunity for people to interact with others with whom they may not otherwise interact.

The human library program has been especially effective in Australia, where a successful living library event at Lismore Public Library held in November of 2006 became established as a monthly event (Pearse, 2009). The Lismore Living Library was the first permanent library to be established across the globe, and the popularity and impact of the trend has led Australia to formulate a National Strategy for development of living libraries (Human Library Organization, 2012). Lismore also has outreach programs such as Link Up, a program that connects students with Living Library Books in the community, and another program that brings human books to aged care facilities (Kinsley, 2009; Pearse, 2009).

In a Sydney library, the concept was introduced in response to media reports suggesting a growing sense of intolerance for diversity among the growing population (Crawshaw, 2010). The program is funded by a grant but still relies on volunteers to “act as books” and “through conversation and sharing their personal experiences . . . help break down prejudices and address misunderstandings” (p. 7). In Australia’s Northern Territory, the human library program brings together patrons and people from other countries to discuss the issues and difficulties faced in the book’s home country or as a result of moving to Australia (Hilder, 2011). The impact has helped foster harmony and community development in the territory’s multicultural communities. The human library movement

has been so successful in Australia that they boast more than 70 local human library organizers, which is more organizers than any of the more than 30 other countries that participate in the human library movement has (Human Library Organization, 2012).

Interacting with human texts would expose students to people who have past experiences in various aspects of life, such as a particular illness, religious background, sexual orientation, or traumatic experience. Garbutt (2008: 275) has offered further explanation of the goal of a living library:

Whatever the differences being worked with, for example, whether multi-cultural, multi-abled, multi-sexed, multi-sexual, or multi-faith, the intended outcome is not assimilation of less-powerful positions in society but of findings ways of coexisting in our differences. Through the practice of conversation, living library participants and organizers are seeking a form of integration that does not leave hegemonic positions undisturbed and unchanged, nor one in which all values are necessarily shared. In this sense, living libraries are 'laboratories' of multicultural cosmopolitan practice worth of greater study and research.

The human library movement is not a consolidated, integrated effort, and concerns and challenges for the program include inconsistency in cataloging or standardizing entries, the voluntary nature of human books, and possible emotional distress. Some facilitators of human libraries such as Lismore Human Library have cataloged their human books (Kinsley, 2009). In Lismore's case, the human book creates its title and the catalog description. While this preserves authenticity, the ways in which the book can be described and connected with a potential reader might also be limited. Books are also volunteers, which may arouse concerns about the type of people most likely to volunteer, longitudinal factors, and other affective factors. The Human Library Organization and Human Libraries Australia have both created resource kits to guide organizers in their efforts to recruit quality books, inspire books, and create a safe space for interaction. Interviews and meetings prior to acquiring and cataloging a book have been recommended to discuss the book title and proposed description and, importantly, understand the book's motivation. The goal does not have to end at cultural exposure. Living libraries potentially share knowledge in multiple domains.

Oral history

Another way libraries can facilitate less mainstream exposure to wisdom is through providing a space for

oral history. Kargbo (2008: 446), working in Sierra Leone, has suggested that librarians can provide academic validity for oral histories by selecting recordings and transcripts and then "develop directories to facilitate access to these vital data and organize and process oral traditions in a similar way they do for printed matter . . . for the continued existence of their cultural heritage." Oral histories have been and can be archived and stored digitally using an array of ICT, including audio and video recordings. Oral history is democratic; it is roots-up rather than top-down.

Some examples of oral history projects that might help us to conceptualize the inclusion of oral history are actually easy to find. The Library of Congress has embraced it through the Storycorps project, which is a public service that helps bring personal histories to the public (Storycorps, 2015). In 2000, the Library of Congress's American Folklife Center also started the Veterans History Project, an oral history project to make available to the public the personal accounts of American war veterans (American Folklife Center, 2014). These projects are important because narrative interviews can teach us what a person feels and thinks, and sets to the truth rather than a mediated version of the truth. Riessman (2012) iterates that narrative interviews have been used across many academic disciplines, from folklore to law and occupational therapy; "narrative analysis . . . is appropriate for studies of social movements, political change, and macrolevel phenomena" (p. 368). For the purposes of this paper, we can imagine that the interactive experience of such an interview cannot be packaged; it can be transcribed and analyzed, but each time a person is interviewed, different aspects of experience will arise based on memories that were triggered in the interaction and that particular context.

Conclusion

The students in this study identified a disjuncture in knowledge and wisdom that were wrapped in statements of value. They clearly valued both the wisdom held by elders and religious figures and also the education that they were receiving at school, but we ask if there are methods to better integrate these two domains of knowledge. This would give the students a way to bring traditional knowledge into their own studies and at the same time legitimize the values of traditional social systems in the educational setting. Integrating human libraries, storytelling, and personal interaction within the walls of the library is a way to bring wisdom into the stacks. It could be used to increase an understanding of diverse voices, especially in the post-colonial world. This will not only

add to the informational ecology within the library, but also provide a means for students to integrate diverse viewpoints, including what has been identified as wisdom into their studies.

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References

- Aaker D and Hammond G (2012) The human library. *Marketing News* 46(11): 9.
- Abergel R (2005) *Don't Judge A Book By Its Cover! The Living Library Organiser's Guide*. Budapest, Hungary: Council of Europe.
- American Folklife Center (2014) *About the Veterans History Project*. Available at: <http://www.loc.gov/vets/about.html> (accessed 13 March 2015).
- Baltes PB and Smith J (1990) Toward a psychology of wisdom and its ontogenesis. In: Sternberg RJ (ed.) *Wisdom: Its Nature, Origins, and Development*. New York: Cambridge University Press, pp. 87–120.
- Bluck S and Gluck J (2005) From the inside out: People's implicit theories of wisdom. In: Sternberg RJ and Jordon J (eds) *A Handbook of Wisdom: Psychological Perspectives*. New York: Cambridge University Press, pp. 84–109.
- Brophy P (2000) Towards a generic model of information and library services in the information age. *Journal of Documentation* 56(2): 161–184.
- Brown RH (1987) *Society as Text: Essays on Rhetoric, Reason, and Reality*. Chicago, IL: University of Chicago.
- Budd JM (1995) An epistemological foundation for library and information science. *Library Quarterly* 65(3): 295–318.
- Budd JM (2002) Jesse Shera, social epistemology and praxis. *Social Epistemology* 16(1): 93–98.
- Crawshaw B (2010) Camden living library is part of community harmony strategy. *inCite* 31(3): 7.
- Durrani S (2008) *Information & Liberation: Writings on the Politics of Information & Librarianship*. Duluth, MN: Library Juice Press.
- Durrani S (2014) *Progressive Librarianship: Perspectives from Kenya and Britain, 1979–2010*. London: Vita Books.
- Eisenberg M, Lowe C and Spitzer K (2004) *Information Literacy: Essential Skills for the Information Age*. 2nd edn. Westport, CT: Libraries Unlimited.
- Falgout S (1992) Hierarchy vs. democracy: Two strategies for the management of knowledge in Pohnpei. *Anthropology & Education Quarterly* 23(1): 30–43.
- Frohmann B (2004) Documentation redux: Prolegomenon to (another) philosophy of information. *Library Trends* 52(3): 387–407.
- Foucault M (1972) *The Archaeology of Knowledge and the Discourse on Language* (AMS Smith, trans.) New York: Pantheon Books. (Originally published in French, 1969)
- Gadamer HG (2006) Classical and philosophical hermeneutics. *Theory, Culture & Society* 23(1): 29–56.
- Garbutt RG (2008) The living library: Some theoretical approaches to a strategy for activating human rights and peace. In: *Activating human rights and peace: Universal responsibility conference 2008 conference proceedings* (ed. RG Garbutt), Byron Bay, NSW, Australia, 1–4 July 2008. Lismore, NSW: Centre for Peace and Social Justice, Southern Cross University, pp. 270–278. Available at: http://epubs.scu.edu.au/cgi/viewcontent.cgi?article=1000&context=cpsj_pubs (accessed 15 March 2015).
- Haeckel SH and Nolan RL (1993) The role of technology in an information age: Transforming symbols into action. In: *The Knowledge Economy: The Nature of Information in the 21st Century, 1993–94 Annual Review of the Institute for Information Studies*. Queenstown, MD: Aspen Institute, pp. 1–24.
- Hendon JA (2000) Having and holding: Storage, memory, knowledge, and social relations. *American Anthropologist* 102(1): 42–53.
- Hilder C (2011) Public libraries serving multicultural communities across Australia: Best practice examples. *Australian Public Libraries and Information Services* 24(3): 116–124.
- Howard P (1994) The confrontation of modern and traditional knowledge systems in development. *Canadian Journal of Communication* 19(2).
- Human Library Organization (2012) *The History of the Human Library*. Available at: <http://humanlibrary.org/the-history.htm> (accessed 13 March 2015).
- Hycner RH (1985) Some guidelines for the phenomenological analysis of interview data. *Human Studies* 8(3): 279–303.
- Indian Civil Rights Act (1968) 25 US Code §§ 1301–1304. Available at: <http://www.tribal-institute.org/lists/icra1968.htm> (accessed 1 July 2015).
- Kargbo JA (2008) Oral traditions and libraries. *Library Review* 57(6): 442–448.
- Kekes J (1983) Wisdom. *American Philosophical Quarterly* 20: 277–232.
- Kinsley L (2009) Lismore's living library: Connecting communities through conversation. *Australasian Public Libraries and Information Services* 22(1): 20–25.
- Lloyd A (2009) Informing practice: Information experiences of ambulance officers in training and on-road practice. *Journal of Documentation* 65(3): 396–419.
- Malin SC (2012) What if? Exploring how libraries can embody trends of the twenty-first century. *Young Adult Library Services* 11(1): 7–9.
- Mbiti JS (1970) *African Religions and Philosophy*. New York: Praeger.
- Morrone A and Workman SB (2014) Keeping pace with the rapid evolution of learning spaces. In: Frasher K (ed.) *The Future of Learning and Teaching in Next Generation Learning Spaces (International Perspectives on*

- Higher Education Research* Vol. 12). Bingley: Emerald, pp. 47–62.
- Pearse T (2009) Living libraries Australia: A national strategy for bringing communities together. *inCite* 30(11): 6.
- Pellowski A (1990) *The World of Storytelling*. Rev. edn. New York: HW Wilson.
- Radford GP (1992) Positivism, Foucault, and the fantasia of the library: Conceptions of knowledge and the modern library experience. *Library Quarterly* 62(4): 408–424. DOI: 10.1086/602496.
- Ricœur P (1991) *From Text to Action*. Evanston, IL: Northwestern University Press.
- Riessman CH (2012) Analysis of personal narratives. In: Gubrium J, et al. (eds) *The SAGE Handbook of Interview Research: The Complexity of the Craft*. Thousand Oaks, CA: SAGE, pp. 367–380.
- Rowley J (2009) Conceptions of wisdom. *Journal of Information Science* 35(1): 110–119.
- Savolainen R (2007) Information behavior and information practice: Reviewing the ‘umbrella concepts’ of information-seeking studies. *Library Quarterly* 77(2): 109–132. DOI: 10.1086/517840.
- Schmit CJ (2002) *Too Deep For Words: A Theology of Liturgical Expression*. Louisville, KY: Westminster John Knox Press.
- Steiner HM and Holley RP (2009) The past, present, and possibilities of commons in the academic library. *The Reference Librarian* 50(4): 309–332.
- Sternberg RJ (ed.) (1990) *Wisdom: Its Nature, Origins, and Development*. New York: Cambridge University Press.
- Sternberg RJ and Jordon J (eds) (2005) *A Handbook of Wisdom: Psychological Perspectives*. New York: Cambridge University Press.
- StoryCorps (2015) *About Us*. Available at: <http://storycorps.org/about/> (accessed 13 March 2015).
- Swift M (2011) Banishing habeas jurisdiction: Why Federal courts lack jurisdiction to hear tribal banishment actions. *Washington Law Review* 86(4): 941–979.
- Turner A, Welch B and Reynolds S (2013) Learning spaces in academic libraries: A review of the evolving trends. *Australian Academic & Research Libraries* 44(4): 226–234. DOI: 10.1080/00048623.2013.857383.
- Turner D (2012) Oral documents in concept and in situ, part I: Grounding an exploration of orality and information behavior. *Journal of Documentation* 68(6): 852–863.
- University of Missouri (2015) *MizzouDiversity*. Available at: <http://diversity.missouri.edu/summit/human-library.php> (accessed 13 March 2015).
- Wolfe CL (2006). Faith-based arbitration: friend or foe: An evaluation of religious arbitration systems and their interaction with secular courts. *Fordham Law Review* 75: 427–469.

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The challenges of reconstructing cultural heritage: An international digital collaboration

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Abstract

The digitization of the Freimann Collection, unique works belonging to the *Wissenschaft des Judentums* (Academic Study of Judaism), was a collaborative, international initiative to virtually reconstruct a cultural Jewish heritage collection that suffered losses during World War II. These works comprised the first engagement with pre-modern Jewish religious texts using modern research methods of academia. Building off a pre-war published catalog, the project brought together remnants of the original library collection in Germany and collections that were gathered in one of the main exile locations of German-speaking Jews in the United States. The freely accessible texts ensure the enhancement of scholarship by providing long-term discovery to an unlimited audience. Digitization and virtual reconstruction are not only crucial from a digital preservation standpoint, but also allow researchers to envision the works in the context of their intellectual and historical significance. The project also generated models for international collaboration and large-scale digitization workflows.

Keywords

Jews, Europe, German-Jewish history, cultural heritage, digital projects

The *Wissenschaft des Judentums* (WDJ) project continues to be a fruitful collaboration among three international institutions in the United States and in Europe: Center for Jewish History (the Center), Leo Baeck Institute (LBI), both in New York, USA, and the Judaica Division of the University Library (JSF) in Frankfurt am Main, Germany. The 2011–2014 stage of the project (Dolnick, 2011) virtually re-created a renowned library collection whose originals were partially destroyed during World War II. The collection is also known as the Freimann Collection, named after the Frankfurt librarian Aron Freimann (1871–1948), who built the largest comprehensive Judaica collection on the European continent (Leo Baeck Institute, 2015) and published a printed catalog in 1932 (Freimann, 1932). Based on this published

catalog, the JSF had started the virtual reconstruction of this prewar Judaica collection in 2007 with funding from the Deutsche Forschungsgemeinschaft (DFG) under the name Freimann-Sammlung/The Freimann Collection. During the course of that project (Heuberger, 2009) JSF estimated that it was missing 25% of the 12,000 titles that once constituted its world-renowned collection. The Center identified approximately 1000 of these missing books within the holdings of its partner organizations, primarily

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in the collections of the Leo Baeck Institute, a library dedicated to German-Jewish history which was founded after the war in New York, and plans were made to digitize the missing volumes for inclusion in the Freimann Portal.

Subsequently, a new collaborative project (Center for Jewish History, 2014) was envisioned and funded by a joint grant of the National Endowment for the Humanities (NEH) and the Deutsche Forschungsgemeinschaft (DFG). It took place between 2011 and 2014 and produced well over 160,000 digital surrogates with accompanying metadata and ingest into both the Freimann Portal (Goethe Universität Frankfurt am Main, 2015) and the Center/LBI's OPAC (Center for Jewish History, 2015).

The importance of this project is based on the fact that the majority of the books from the Freimann Collection belong to the academic field of *Wissenschaft des Judentums* (Academic Study of Judaism) (Leo Baeck Institute, 2015), an important scholarly movement among European Jews in the 19th and the beginning of the 20th century that comprised the first engagement with pre-modern Jewish religious texts using the modern research methods of academia. Providing free access to a unique collection of books that suffered losses during a worldwide war ensures the enhancement of scholarship and discovery to an unlimited audience.

While at the time of their writing, these books were often read only by a network of scholars themselves, they comprise today an important primary resource for historical research in a diversity of disciplines of the humanities and social sciences. Given the comprehensive nature of the WDJ collection, the documents provide insight into a broad range of religious and political movements worldwide.

It was recognized that creating digital surrogates of these materials was not only prudent from a digital preservation standpoint, but a crucial step in making them discoverable and accessible. It was vital to recreate this historically significant collection, much of which no longer existed in physical form since most European Judaica collections had been destroyed or dispersed during World War II. The collaboration among the three institutions combined the remnants of one of the historically richest European Judaica collections (Judaica Collection Frankfurt) with a collection that was rebuilt after the war in one of the outposts of the exiled German-Jewish community (Leo Baeck Institute New York). The Center for Jewish History provided digital services and logistical support. As a result, the most comprehensive digital library of WDJ in existence was produced, and the academic and cultural resources from the

pre-Holocaust era were recreated using 21st-century technology and practice.

Basis of the project

A key element of this cultural reconstruction project was the existence of a printed library catalog for the Frankfurt Judaica Collection that was published in 1932 (Freimann, 1932). The curator, Professor Aron Freimann, who looked after the Judaica collection from 1898 until 1933, made it the largest and most significant Judaica collection on the European continent before World War II. The collection, with its approximately 12,000 titles, was created at the end of the 19th century through generous donations of Frankfurt Jewish philanthropists. As Aron Freimann noted in his introduction, the publication of this Judaica catalog was a bibliographical milestone, since catalogs of Judaica collections had only been published partially, unlike the more language-focused Hebraica collections. First plans for this printed catalog had already been announced in 1908. It cannot be emphasized enough how fortunate is the existence and survival of this catalog, which was published in 1932 before the beginning of the Third Reich. The 12 years of Nazi rule between 1933 and 1945 lead to the annihilation of Jewish life and cultural heritage, including the systematic destruction of Jewish libraries and collections. Without the existence of this catalog it would have been very difficult to gather comprehensive bibliographical data for Judaica publications before 1932. The importance of this catalog can also be seen in the fact that the catalog was reprinted after the war, in 1968. In this edition, the old call numbers are no longer listed, and it is meant to be used as a bibliography, not a catalog of a collection. Using Freimann's printed catalog to cross-reference and isolate the works missing from the WDJ collection for inclusion on the project was an integral part of the process, and enabled the realization of the project.

Wissenschaft des Judentums

The Freimann catalog is especially important since it also includes the major historical literature on the science of Judaism (WDJ) until 1932. WDJ is rooted in the enlightenment movement (Haskalah) and combines the ideals of emancipation and freedom brought about in the French revolution with critical engagement with the classical sources of Judaism. Founded in Germany in the early 1820s, WDJ soon became the legacy of important Jewish communities worldwide, and one of Judaism's outstanding manifestations of modern times.

The WDJ was the key instrument in the transformation of Judaism during the 19th century through the use of new methods of textual study, especially philology and history, in the study of Jewish texts and the history of Judaism. Scholars of classical studies, Greek, and Latin had first developed these methods for exploring classical texts and the history of the ancient world. Other scholars then applied this methodology to the study of Christianity, stirring major controversies by treating sacred texts as historical, human creations.

The new scholars set out to understand how Judaism had changed and developed over the millennia by posing questions that were historical and scientific. This approach bore the potential for dissolving the sacred traditions and timeless nature of the texts and corroding the timeless revelations and traditions. Yet scholars could also employ WDJ to support revelation and tradition. WDJ was a malleable tool in the hands of its practitioners. The academic study of Judaism and Jewish history played a significant role in the formation of a new Jewish identity that encompassed both Jewish and German components. The scholarship of the *Wissenschaft* movement formed intellectual directions such as Conservative and Reform Judaism and inspired the foundation of scholarly institutions such as the Leo Baeck Institute at the Center for Jewish History, Hebrew University in Jerusalem, and Jewish Theological Seminary in New York. Today the legacy of WDJ is still alive and relevant as Jewish Studies programs around the world continue to grow and flourish.

Audiences

Due to the rarity and fragile condition of historic resources for Jewish studies neither the Center nor the JSF allows for their lending, requiring researchers to travel to their reading rooms to view the works onsite or have photocopies, microfilms, or individual scans sent abroad. Researchers at both institutions as well as worldwide have benefited from easy digital access to these materials. This collaboration has produced the most comprehensive digital library of WDJ in existence, and because of this, users can closely examine these works without having the materials in hand. The easy accessibility and the compact and defined format can reach large and diverse audiences beyond the core groups of academic users.

The project partners and their collaborative roles

Three primary partners participated in the WDJ project: Judaica Division Frankfurt am Main, the Leo Baeck Institute, and the Center for Jewish History.

The Judaica Division Frankfurt (Judaica Abteilung Frankfurt, JSF) is part of the Frankfurt University Library (Universitätsbibliothek Johann Christian Senckenberg Frankfurt am Main), one of the central scholarly libraries in Germany. As of 2013, its comprehensive holdings included special collections of about 9.4 million titles. The Library performs 1.7 million book loans each year and was responsible for 11 special collections financed by the Deutsche Forschungsgemeinschaft (DFG) for many years. JSF owns the largest collection of Jewish Studies in Germany, as well as literature about Israel and is one of the world's great Judaica library collections. It was founded at the end of the 19th century through generous donations of Frankfurt Jewish philanthropists. Professor Dr Aron Freimann, the librarian until 1933, formed it into the most significant Judaica collection of the European continent before World War II. The collection suffered partial losses during National Socialism and the war.

The Leo Baeck Institute (LBI) in New York is devoted to the history of German-speaking Jews. It was founded in 1955 by leading German-Jewish émigré intellectuals including Martin Buber, Max Grunewald, Hannah Arendt and Robert Weltsch, who were determined to preserve the vibrant cultural heritage of German-speaking Jewry that was nearly destroyed in the Holocaust. Centers were established in New York, London, and Jerusalem, as the places with the largest numbers of exiled German-speaking Jews. Today, the 80,000-volume library and extensive archival and art collections in New York represent the most significant repository of primary source material and scholarship on the Jewish communities of Central Europe over the past five centuries. They named the Institute for Rabbi Leo Baeck, the last leader of Germany's Jewish Community under the Nazi regime. LBI-New York is a founding member of the Center for Jewish History in Manhattan and also maintains an office in Berlin, and a branch of its archives at the Jewish Museum Berlin.

The Center for Jewish History in New York is home to five partner organizations: American Jewish Historical Society, American Sephardi Federation, Leo Baeck Institute, Yeshiva University Museum, and YIVO Institute for Jewish Research. The partners hold archival collections that span approximately 700 years of history and include more than 500,000 volumes, 100 million archival documents, and tens of thousands of textiles, ritual objects, recordings, films, photographs, and works of art. The Center's Online Public Access Catalog (OPAC) gives users the opportunity to search across the partner collections via a single-search portal, and users in more than

150 countries have accessed the Center's resources online. Preservation, access and scholarship form the core of the Center's work. As a public research institution, the Center promotes open access to information, and illuminates the Jewish experience through education and research, scholarship, programming, and exhibits.

The partners on the WDJ project were a natural fit for collaboration, given their overlapping collection scopes and core missions. At the conception of the project, it was important to: identify the partners whose collaboration would be the most logical and successful; determine the needed technical tools, capabilities and expertise; ascertain how to build on and use existing resources, and generate a road map to illustrate how all the moving parts would come together.

The Judaica Division in Frankfurt laid the groundwork in 2007. With the remnants of the collection, JSF started the digitization project and set up the Freimann Portal. In 2011, the Center and the LBI joined the effort and undertook the digitization of additional WDJ materials, found mainly in the LBI collections; some works were also found in the collections of three other Center partners.

The roles of each partner were clearly delineated, and each institution focused on a particular aspect of the dynamic process. LBI Library staff handled the selection, preparation, cataloging and physical transfer of materials based on the missing lists in Frankfurt, while the Digital Lab staff at the CJH handled the digitization and transfer of digital content to JSF. JSF oversaw the project's main objectives, and incorporated the new digital content into the existing Freimann portal. While the preparation and selection of materials was an intensive process and required dedicated time prior to the project's start date, many of the steps in the project plan were undertaken concurrently.

Selection, preparation and cataloging of materials at LBI library

The project required detailed bibliographical preparation, selection, verification, and intense tracking of materials. LBI catalogers, working from the original Freimann Library catalog, worked through the titles that were identified as missing at JSF and compared them with the holdings at LBI and the other partner organizations at CJH. This process ensured not only the selection of materials but also their full descriptive cataloging, which was required before digitization took place. LBI catalogers created a shared project management spreadsheet with all the titles to manage

the project. The majority (80%) of the materials came from the LBI collections. However, some WDJ works were also found in the collections of the Center's other partners: American Sephardi Federation, American Jewish Historical Society, and YIVO Institute for Jewish Research. Credit lines were added to descriptive information at JSF to specify the name of the contributing partner. Each book (or each volume in the case of multi-volumes) was assigned a unique digital identifier from a list of URNs monitored by JSF. When this initial preparation was completed, the books underwent digitization and quality control in the Center's Lab in batches of 50 to 100.

A challenging part of the project was the matching of the entries from the 1932 German Freimann catalog with the bibliographical records in the current American online library system, both following different bibliographical descriptive standards. The arduous nature of the bibliographical analysis of the Freimann catalog entries was only rivaled by the book tracking system that was put into place which also included an intricate post-production process to resolve problem cases.

Digitization at the Center's digital lab

The Center's Gruss Lipper Digital Lab was founded in 2006 to serve the Center community on ad hoc and small-scale projects. The WDJ project was the first large-scale digitization project done in the Lab, and it served as a model for future large-scale initiatives.

During the project's first 12 months (September 2011–August 2012), the Center coordinated efforts with JSF to generate and test workflow protocols for the transfer of materials between the two institutions, hired Lab staff dedicated to the project, and purchased an Atiz BookPro, a dedicated book cradle which uses two 35MM digital cameras for image capture. Staffing included a dedicated photographer, a dedicated quality assurance technician, and a metadata librarian. The first year of the WDJ project also was spent creating and coordinating communication protocols among the Center, LBI, and JSF.

In the second year, additional staff were assigned to the project for both image capture and quality assurance functions. Regarding equipment, while the BookPro remained the primary camera for the entire project and completed the majority of the work, the Lab's large format Better Light camera was used to digitize selected fragile and oversize materials. Photographers discovered elements of the physical books that, while not particularly vulnerable overall as objects, made them more vulnerable for photography in particular. For example, condition issues such as

brittleness and tight margins necessitated the removal of a selection of books from the original list. These books were then replaced with alternate titles. The Center's Conservator assessed and stabilized selected objects prior to shooting. In addition, the quality assurance process was reviewed and adjusted.

Following image capture and quality assurance, the batches of digital surrogates were sent to JSF via external hard drive shipments. Simultaneously, LBI sent bibliographic records of the digitized books to JSF. This workflow was built in to ensure the quality and comprehensiveness of the process.

The role of JSF

Throughout the project, the Center's Digital Lab and LBI worked with JSF to complete the delivery of all digital assets and related metadata. JSF then ingested the digital assets into the Freimann Portal and enhanced the metadata by connecting it to authority databases, including standardized headings according to the Virtual International Authority File (VIAF) and other thesauri. The process of digitization was checked carefully page by page and the books were structured according to their content, marking title and final pages, chapter entries, and so on. Subject headings and systematic indexing were added, culminating in accessibility to the materials via the portal. Browsing was enabled using the indexing of relevant Freimann catalog chapters, thus allowing the discovery of unknown titles relevant to the subject. The quality of the metadata facilitates the discovery of the material via well-known search engines such as Google, thus producing hundreds of visitors using the site and documents daily. In addition, enhanced metadata linked to authority headings enables the use of this data as Linked Open Data sets.

JSF used the Visual Library data management system to manage all digital content, including descriptive metadata and the digital assets themselves. Since 1998, JSF has supported and maintained their online Judaica databases, and the institution has procedures in place to ensure the long-term management of and access to the Freimann Portal and its WDJ online digital content.

Long term-sustainability

All project partners are committed to the long-term care of digital assets. Building an infrastructure that will sustain not only the assets themselves but the access provided to them is crucial. In addition to access via the Freimann Portal at JSF, the digital assets were also ingested into the Center's digital assets management system, providing an additional

access point through which researchers discover and view materials.

Bringing the WDJ collection together in one portal and situating it in context is one way the WDJ project ensured its long-term viability. Adhering to best practices in both digitization and accessibility plays a vital role in sustainability for the long term. The implementation of a digital preservation program and exploration of next generation digital assets management tools is currently underway at the Center/LBI, and is a priority going forward. Fundraising, budgeting, and projecting costs for digital storage have also been key elements in planning for future sustainability of digital assets. A combination of cloud options and the augmentation of local infrastructure ensures the safety and security of the digital assets produced in the Lab, and the configuration will continue to evolve.

Accomplishments

This project's importance cannot be overstated. The reconstruction of the largest and most significant Judaica collection on the European continent before World War II made it possible for researchers to again discover and access this cultural heritage over six decades later. This was the impetus for the project, and clearly the most resonant.

From a digitization standpoint, the project has served as a model for large-scale digitization projects, as well as for international collaboration. In addition to fostering enhanced workflows for digitization and access, new ways of communication and data transfer were established.

Continuation of the project

Due to the success of this project, both the Center and JSF aim to continue this important work together. As the original Freimann project as well as this project focused on books or monographs, a natural next step could be to digitize the periodicals in the WDJ collection. Since their development in the 18th century, Jewish periodicals were an integral part of the corpus of Jewish publications, having their own specific characteristics. From the beginning they were created as a temporary product only, meant to serve for daily, weekly or monthly use. Today—after the extinction policy of the Nazi regime and the Second World War—it is unusual to find complete sets of Jewish periodicals. It would be of value to integrate Compact Memory (Heuberger, 2014), an existing portal of 19th-century German-Jewish periodicals at JSF and at the Germania Judaica in Cologne, with a digital periodicals portal at LBI. Additional titles would be

added, and the shared portal enhanced and further developed.

Long-term impact

This international project is an excellent case study for the reconstruction of cultural heritage by digitally unifying resources that have been physically scattered across the globe due to world events. Remnants of collections that were partially destroyed during a war and collections that were collected in exile were reunited.

Important elements of this collaborative project are as follows: the evaluation of the importance of a collection; the identification of logical partners; the development of a road map; and technical, administrative, and international communication approaches and solutions. It is especially noteworthy that the identification, discovery, use, and incorporation of existing old bibliographical sources were first and important steps.

Collaborative, themed digital portals are on the one hand important technical tools to reconstruct collections and on the other hand important research tools to promote humanities and cultural content in context to existing and new audiences.

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References

- Center for Jewish History (2014) *Science of Judaism (Wissenschaft des Judentums)*. Available at: <http://16thstreet.tumblr.com/post/103655749912/science-of-judaism-wissenschaft-des-judentums> (accessed 29 June 2015).
- Center for Jewish History (2015) *Single-Search Portal*. Available at: <http://search.cjh.org> (accessed 29 June 2015).
- Dolnick S (2011) Jewish texts lost in war are surfacing in New York. *New York Times*, 7 March. Available at: http://www.nytimes.com/2011/03/08/nyregion/08books.html?_r=0 (accessed 29 April 2015).
- Freimann A (1932, reprinted 1968) *Katalog der Judaica und Hebraica, Erster Band: Judaica*. Frankfurt am Main: Lehrberger.
- Goethe Universität Frankfurt am Main, Universitätsbibliothek, Freimann-Sammlung (2015) *The Freimann Collection*. Available at: <http://sammlungen.ub.uni-frankfurt.de/freimann?lang=en> (accessed 29 June 2015).
- Heuberger R (2009) Arche Noah der Erinnerung—Jüdisches Kulturerbe Online. In: Gelber MH (ed.) *Integration und Ausgrenzung: Studien zur deutsch-jüdischen Literatur- und Kulturgeschichte von der Frühen Neuzeit bis zur Gegenwart; Festschrift für Hans Otto Horch zum 65. Geburtstag*. Tübingen: Niemeyer, pp. 511–518.
- Heuberger R (2014) Cultural heritage reconstructed: Compact memory and the Frankfurt Digital Judaica Collection. In: *IFLA world library and information congress: 80th IFLA general conference and assembly*, Lyon, France, 16–22 August 2014. Available at: http://www.ifla.org/files/assets/newspapers/Geneva_2014/s6-heuberger-en.pdf (accessed 8 April 2015).
- Leo Baeck Institute (2015) *Wissenschaft des Judentums: The Freimann Collection*. Available at: <http://www.lbi.org/collections/library/highlights-of-lbi-library-collection/wissenschaft-des-judentums-freimann-collection/> (accessed 29 June 2015).
- Leo Baeck Institute (2015) *Wissenschaft des Judentums: Jewish Studies and the Shaping of Jewish Identity*. Exhibition at the Leo Baeck Institute, 1 March 2015–1 August 2015. Available at: <http://www.lbi.org/2015/02/wissenschaft-judentum-jewish-studies-jewish-identity-exhibition/> (accessed 29 April 2015).

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Born fi dead? Special collections and born digital heritage, Jamaica

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Abstract

Cultural heritage print items in special collections hold distinct positions in libraries. Yet their potential for pedagogy and learning may often be under-explored due to issues related to preservation management. These challenges underpin their exclusivity, a perception which may impact donor relations and unconsciously impede research access. Conversely, electronic publishing has enhanced access to born digital cultural heritage products of scholars and creative expressionists. Without the hassle of intermediaries, these born digital producers represent a “new world order” for libraries charged with dual responsibility for access and posterity. Some challenges are infrastructural, such as Internet penetration, others are human related arising from the need for capacity building in areas such as publishing and effective preservation strategies. These skills are essential to fully conceptualize potential for loss of cultural heritage products and the need for viable mechanisms to manage content; anything less would suggest cultural heritage products are literally “born fi dead”.

Keywords

Cultural heritage management, principles of library and information science, special collections/rare books, collection development, Caribbean, Latin America and the Caribbean, information and society/culture, access to knowledge/access to information, preservation and conservation

Introduction

The West Indies cultural identity developed from watersheds in its history. It began with the re-discovery of the islands in the 15th century, the shipment of millions of people from the African continent to this New World through the Middle Passage, indentureship, post-colonialism, and Independence. In the 21st century the islands are now subject to the vagaries of globalization as small island developing states.

The more popular term “Caribbean” came into being in the 19th century during the period of United States expansion, according to Puerto Rican historian Antonia Gazambide-Giegel (Girvan, 2000). The group of islands situated in the Caribbean Sea consists of a range of English, French, Spanish, and Dutch-speaking countries, representative of the nationality of the invasive dominant power over the centuries.

Jamaica is located at the northwestern portion of the Caribbean Sea and is the third largest island in the Greater Antilles. Home to approximately three

million people, this Anglophone Caribbean nation has a cultural heritage of tangible cultural products consisting of literature, artwork, and artifacts; and intangible products which include expressions of oral tales, dances, and music. Reggae and dancehall music are two of the more eminent intangible exports of the island.

The recent focus on creative industries in the Caribbean, in particular music and film (Boxill, 2014) has triggered a renewed tangential examination of cultural heritage products. The renaissance is timely as McDonald (2000: 531) had long since critiqued the Caribbean as being “distressingly inferior in the effort and time and resources and money” put into preservation efforts.

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Like most other developing countries, Jamaica's cultural heritage is now largely influenced by the Internet. Multiple intellectual property breaches by industrialized countries in the past have since prompted the Jamaican Government's counter measures to attempt retribution by introducing a retroactive extension of copyright to 95 years (Copyright Amendment Bill, 2015). This move will have a significant impact on libraries, which have since countered Government's proposal by recommending a 70-year extension with no retroactivity. While the publishing industry is still on the verge of transformation, quite a large body of cultural works is now being "born digital". Creative and cultural scholars have embraced the freedom of electronic publishing, presenting a copious, inventive, unrestrained bevy of expressions of works which fall within the *bercelonette* of digital birth. Here, born digital resources are defined as items created and managed in a digital form (Erway, 2010), distinct from digitized items which were originally committed to print. The UNESCO (2003: 1) Charter on the Preservation of the Digital Heritage identifies such digital materials as "texts, databases, still and moving images, audio, graphics, software and web-pages".

Special collections in the academic library have also been impacted by the Internet. In the midst of a generic template of information available on electronic databases, these mainly print collections of the country's antiquity are the library's single most distinguishing feature. In this new dispensation, libraries must consider ways to provide more access to special collections while simultaneously applying defensive techniques for posterity (Traister, 2000).

In Jamaica, preservation of print special collections must contend with intemperate climate, insufficient resources, and fickle gatekeepers who include stakeholders that are under- and un-educated on the inherent value of preservation and conservation.

For libraries, archives and museums (LAM), preservation management of cultural heritage is contingent on the institution's mandate. While LAMs may superficially be classified as information units with interlocking roles, their focus, priorities, staff competencies, and image are quite dissimilar (Lidman, 2004), thus collaborative ventures are at times willing but weak, leading to significant challenges in the harvesting, preservation, and provision of access to cultural heritage material in Jamaica.

Some Caribbean libraries have embraced digitization as the seeming panacea for preservation efforts, but this is idealistic as Renwick (2011: 4) counters, "intermittent power, low levels of computer, Internet and information literacy, limited bandwidth and

access to computers", and the inefficient use of the technologies are chronic issues with which Caribbean libraries must contend. Indeed, Temper (2005) asserts that digitization is not yet a long-term preservation method. In truth, much of the focus on digitization is on data management with less attention attributed to technical issues related to the production and long-term storage of e-data (Lawrence et al., 2000; Temper, 2005). The situation is volatile at best, with invisible strategies and opaque directions by library leaders, leaving some to wonder about the preservation of tangible cultural heritage, and in the current scenario, whether the creation of born digital items is literally "born fi dead".

This paper looks at preservation challenges of cultural heritage products in Jamaica with especial emphasis on materials held in special collections and those born digital.

Special collections as cultural heritage within the research library

Academic libraries are not often featured as purveyors of cultural heritage in Jamaica. That role is often reserved for the National Library or the Institute of Jamaica because of their more intimate interaction with independent researchers, members of the public, and their nationalistic agenda. Their relationship with cultural products thus affords them the opportunity to have the Government's ear on issues of rights management and preservation. The more research-oriented focus of the University of the West Indies (UWI) Mona library, despite its mandate to collect all things West Indian, makes it difficult for some, even librarians, to see the value of special collections as cultural heritage, indeed as Traister (2000: 56) submits, some professionals even see them as "a waste of time".

At the West Indies and Special Collections (WI&SC) of the UWI, Mona Library, there are significant collections which chronicle the cultural heritage of Jamaica. The unit was created in the 1970s through the efforts of then University Librarian, Kenneth EN Ingram, who was also an historian, bibliographer, and scholar. Apart from archiving the institutional memory of the university, the collection was grown with purchased works although in the last 10 years this has not been possible and so there has been heavy dependence on donations. The global recession has significantly impacted the library's purchasing power. Unfortunately the heavy reliance on gifts, not unwelcomed, has taken much of the evaluatory decisions out of the hands of librarians and into the hands of benefactors or university administrators. It becomes

difficult then to pre-determine whether gifted content aligns with more than the fundamental collecting interests. Too, it becomes difficult to ascribe potential use or access restrictions, cultural or research potential or sometimes even the scope and condition of a body of works until the items are actually received and a preliminary scan is conducted in-house. As a result, librarians must adopt a form of “push” promotion of the special collections, taking the cultural products to faculty and students, highlighting potential research areas rather than the “pull” concept, which is the reverse and traditional concept. The peril with the push approach is that, like marketing, it does not build brand loyalty and is a short-term fix to an ongoing chronic problem of the loss of the uniqueness and focus on special collections from the mass effect of electronic databases. This is also attributed, in part, to the changing emphasis of societal needs and perceptions of cultural heritage.

Despite this serendipitous approach to building special collections, they still form the single distinguishing features in the library’s holdings. An inconclusive list of the growing collection includes public and private papers of two former Prime Ministers; the Honourable Edward Seaga and PJ Patterson; novelists, John Hearne and Vic Reid, celebrated playwright, Trevor Rhone; former Vice Chancellor Emeritus, scholar and noted cultural icon, Professor Emeritus Rex Nettleford, and Dr Olive Lewin, world-renowned Jamaican ethnomusicologist. This is in addition to tainos artifacts and the traditional rare books and manuscripts.

Several collections, such as the Trevor Rhone and Rex Nettleford Collections are still being processed and so are not formally accessible to the public via the online catalogue or finding aids. This does not mean that “access” is not available. Jones (2003) notes that references in the literature indicating the existence of a body of works, and word of mouth, as through the liaison librarian function are alternative means of providing access. The latter method, for example, sparked faculty’s interest in the Trevor Rhone Collection. Consequently, an assessment of the collection’s viability for research and teaching in a life writing class in the UWI’s Literatures in English programme is being explored. Anasi et al. (2013) noted the use of cultural heritage in research and learning as instrumental in protecting rights, and serving as instruments of public accountability. Despite this affirmative, Schmiesing and Hollis (2002) had observed the use of special collections for teaching was a rarely researched topic in the library literature. Their argument that faculty and librarians overlooked the “pedagogical advantages of using rare materials and book

history to further students’ understanding of subjects within a variety of disciplines” (p. 466) can be further extended to the use of cultural heritage items.

Through the capture of cultural heritage, the library not only ensures these items’ posterity for future generations; but the objects and records demonstrate the achievements and progress (Manaf, 2007) Jamaica has made since it gained its independence in 1962. Such expressions should provide fruitful opportunities for collaboration between the library and faculty in generating new knowledge and pedagogy.

Preservation and conservation of the special collections

The issues which surround preservation and conservation efforts in libraries in Jamaica are undoubtedly similar to those of other libraries in developing countries. Smith (2007) in articulating the need for public policies and economic models which support preservation attempted to establish a framework for value within the United States context. In support of the value claim, however, libraries must be conscious of accusations of exclusive collections, not necessarily a good thing for donors who want their works to be used, and reclusive gatekeepers who may be reluctant to establish a balance between access and preservation (Traister, 2000). Understandably though, all collections and users are not created equal and much of the reticence of librarians to fully open the Collection is premised on prior bad acts of university students and some faculty members. Preservation and conservation efforts are also hampered by several factors, which include:

Donor relations. Collections are often partially-gifted. The process of having donors sign off on donations is sometimes cumbersome and long-winded, and fraught with uncertainties especially when the items hold emotional memories. The absence of a strong and clear policy on gifts contributes to the challenge as donors with caveats and specifications further complicate bequests (Ballestro and Howze, 2005). As a result the library is reasonably reluctant to advance limited funds sorting, accessioning, and cataloguing collections which may be recaptured by the donor. Potential donors also want their collections to be used (Retired Staff, 2012, personal communication), and the restricted access provided by the library is a real deterrent for sought after gifts.

Space constraints. Insufficient spacing hinders the proper storage of unprocessed collections resulting in potential physical damage from unstable

temperature and humidity. Carrico (1999 cited in Ballestro and Howze, 2005) had suggested one of the questionable benefits of unsolicited gifts was the processing time and storage space required to host them. As the situation stands currently, gift items are deposited into the WI&SC unit while arrangements are made to have them fumigated. Their deposit into the unit serves as a safeguard measure especially if no inventory of the items was conducted at arrival. There is, however, the risk of transferring infestations from untreated gifts to treated library items.

Top staff dependence. Access to special collections in the Unit are too staff dependent. The head of the unit and one clerical are two long-serving staff members with institutional memory. Occasionally, access is left to their recall; a position which became transparently untenable given their imminent retirement in the upcoming year. Fortunately attempts are now ongoing to make the collection more accessible to staff and users by updating the location of items in the catalogue, and inputting finding aids in records of processed material into the Archivist toolkit software. There is still need for a more efficient, inclusive system of documentation which needs to be inbuilt into the unit's workflow. Thus far, the rate of implementation of this aspect of access provision has been slow.

Backlog. The centralized cataloguing department has been understaffed for several years with three continuous cataloguers. In addition to the Main library which caters to the Social Sciences, Humanities and Education students, the cataloguing unit is also responsible for servicing the Medical, Law, Science, and off-site campus branch libraries. Understandably, focus has been on satisfying the needs of the student population seeking degrees with global equivalency. Consequently Special Collection items are ascribed low priority. But, according to Jones (2003) there is high risk of uncatalogued items being lost or stolen. Too, their inaccessibility could hinder potential research activities.

Education and training. There is insufficient professional expertise, poor sharing and collaboration for special collection development, especially as it relates to cultural heritage material. While there is an acknowledgement that an approach is needed to deal with and handle gifts, there appears to be insufficient "how to" knowledge. Consequently there is a need to build capacity among special collections librarians to properly care for, market, and promote the collection. According to Grieder (1952 cited in Ballestro and Howze, 2005: 53) other important librarian attributes

are "knowledge of bibliographical procedure, diplomacy, and a capacity for decision making".

Born digital items as cultural heritage items

The manifestation of born digital expressions presents a simultaneous or alternating emotion of love and hate for libraries in Jamaica. The Internet creates an outlet for nouvelle forms of expressions and creators thus allowing for a more interactive process by users. Consequently there has been an upsurge in the number of cultural works represented in e-books, CDs, YouTube clips, artwork, etc.

Unfortunately, the challenges related to born digital material can be as diverse as the items themselves. Apart from the lack of funds to purchase the items and the technology on which they are stored or fully subscribe to the multiple aggregators for access, the institutions also may not have the trained personnel to effect substantive changes. The following are some other challenges associated with born digital cultural heritage products.

Loss of access to born digital cultural products

The Internet infrastructure in Jamaica is severely underdeveloped. The *Global IT Report 2014* (Bilbao-Osorio et al., 2014) reported little progress was being made in bridging the digital divide between technology-savvy nations and others, citing the country as being at risk of missing out on global competitiveness. Intermittent Internet access associated with digitization is also attributable to born digital items whose accessibility rests upon the platform on which the items are published. In the last few years, local authors have taken to publishing on Amazon with access available via the Kindle. While Amazon has admittedly revolutionized publishing opportunities for local independent creators, publishing in e-format only should be of concern to information institutions. The public, national, and academic libraries do not currently possess Kindle or digital distributor systems such as Overdrive to facilitate customer borrowing of e-books or the sharing capabilities. Consequently, born digital cultural e-books, unlike their print equivalents, cannot be easily shared with and among nationals.

In addition to not being in possession of electronic devices for reading books, most government and quasi-government agencies follow a procurement process which may not support credit card purchases. Additionally, even if the material, with device, is gifted by creators there is the real threat of obsolescence of the particular equipment.

Some persons argue that there is lot of born digital reading material available free for download on the Internet; but these items seldom represent the indigenous Jamaican culture which is important for cultural transmission. In an interview with an award-winning local author, on her choice to publish a solely electronic children's book (Diane Brown, 2015, personal communication), Brown admitted her motivation stemmed from publishing in a new format which was less costly and which she assumed would reach a wider global audience. Understandably, an author's focus might not be posterity and non-commercial access. Too, legal deposit, while mandatory, may not be of high concern to authors. The traditional publishing process in the Caribbean is expensive and authors are not always satisfied with binding options or colour palettes provided, especially with heavily illustrated children's books (Alison Latchman, 2015, personal communication). Too, much of the support for professionally produced self-published materials such as book editors, copy editors, etc. are not commonly available. Many established authors were provided with their first break through UK presses such as Macmillan and PeePal Tree Press.

Quality of cultural heritage items born digital

Curdella Forbes (2013) acknowledges the increase in "homegrown" fiction in the last decade, facilitated mainly by digital technology, the Internet and desk top publishing. Unfortunately, much of the "homegrown" material lacks the editorial controls with the results being works filled with grammatical errors, other editorial mishaps, and inappropriate use of copyrighted materials. Joanne Johnson, another noted children's author implied the lack of standards of some of these publications was not advantageous to Caribbean works (Edwards, 2011). She argued that a writer's ability to accept criticism and/or rejection of their work guaranteed a more worthwhile product. A similar argument could be ascribed to scholarly publishing and substantiation for the peer review process.

Unfortunately libraries have little control over the quality of the works, and if presented, they must be accepted as legal deposit, and form part of the cultural heritage of the country.

Loss of born digital scholarly works with cultural content

The profusion of grey literature has been a chronic challenge for developing countries. Works with relevant Caribbean content are hidden in eclectic compilation of materials (Ramchand, 2000). Some

researchers and government ministries have opted to post reports online with the intent to improve access to other scholars and the interested public. The problem with some of these works is that most times they lack proper bibliographic information which red flags their credibility and usability in knowledge generation. Too, there is little consistency. As librarians struggle to assist students to become ethically responsible researchers, and avoid plagiarism, citing and assigning credit to thoughts and ideas is extremely important, especially as globalization takes roots in all aspects of our existence. Unfortunately some works lack elemental signatures such as the date of creation, which makes it hard to establish whether it is a final version or a draft, author affiliation or accreditation, organization affiliation, etc. So while, there may be reasonably argued content or important cultural information which may not be accessible elsewhere, librarians must caution use of such material for knowledge generation and research. One response could be to teach students how to read and "interrogate" the URL to find the required bibliographic information.

The creation of an electronic cultural heritage divide

As mentioned previously, Internet bandwidth is not widespread and so Internet access, for those who can afford it, is concentrated in the urban areas. For decades, Jamaica has struggled with "low growth, high public debt and many external shocks which have further weakened the economy" (World Bank, 2015). In rural areas Internet connection is extremely slow or non-existent, as penetration has not kept pace with government policy, political promises, and pragmatic business decisions. Accordingly children who are located in these areas are denied equal access to the cultural heritage of Jamaica when these products exist solely in a born digital format. The situation has the potential for the creation of an additional divide – the possessors of the technology with the funds and credit cards to access and download culturally related works and those without these accoutrements.

Resource knowledge and description for access

Ramchand (2000: 515) notes "cultural confidence is knowing who you are and why you are in the midst of all the convulsions that are changing your life". He echoed similar sentiments by Sancho (1973: 80) who critiqued the dearth of Caribbean creative endeavours used in the schools as West Indians not "sufficiently rooted in the beauties of our [their] vernacular and the knowledge of our [their] literature"; and with

educators themselves “undernourished” in this area so unable to feed their charges.

So in addition to contemporary librarians lacking knowledge of the new cache of West Indian writers, there also lies the challenge of description of the works.

In the changing e-environment, especially with born digital and digitized items, the terminology used to make these items discoverable does not always gel with formal cataloguing rules. Therefore while Jamaican nationals can easily discover items on their cultural heritage by performing a natural search of terms via Google, the more restrictive vocabulary used by cataloguers may pose a problem for discovery. For example, a search for “Caribbean folk tales” “Caribbean fairy stories” and “Caribbean legends” produced hopelessly limited hits in the library’s catalogue despite a fair amount of works on the shelves through a physical inspection. Conversely, a similar search on Google produced a mass of hits which included not only links to blogs and websites which address indigenous Jamaican children’s tales but also some material which had since fallen out of copyright and was subsequently digitized by Guttenberg, Haithi or Google books.

Conclusion

Preservation efforts of special collections and born digital items present an interesting challenge for libraries in Jamaica. The ideals of cultural heritage in special collections can assume an exclusive or inclusive approach. Librarians must be decisive on the way forward, ever mindful of the changing demographics and focus of faculty, students, and their research agenda. A revisit of policies which indicate how much access is provided may be the first step towards promoting cultural heritage items for pedagogical purposes.

Similarly, the paradigms for born digital items for research and cultural expressions may need to be explored. In the changing environment of open access, libraries may need to demonstrate a stronger interest in born digital items in their different spheres, to ensure standards are upheld and access is made available to all citizens. Much of the transgressions in electronic self-publishing can be attributed to lack of awareness of standard publishing procedures (Edwards, 2011). Consequently born digital items, despite the novelty of ideas reframed without the restrictions of external editorial advisories, are in a fight for legitimacy. This plea for acceptance was reflected in this dub poetry composed by the author, the preservation librarian and three paraprofessional

staffs of the UWI, Mona Library and presented at the 13th Symposium of the Archaeological Society of Jamaica. Dub poetry evolved from dub music of the reggae rhythms in Jamaica in the 1970s. Accompanied by the beats of a wooden drum, the poem is read with a staccato beat in the patwa or local dialect. The drum is another strong evidence of survival of Africa in this New World (Whyllie, 1998). The poem “Born Digital” is recited as follows:

Born digital

Mi born digital but it not ah easy trad
From mi enter dis father land
Mi secluded,
Dem say mi naa provide equality
Cause me quality nah match de uppity
But mi wah be loved,
By mi linki
Like google
Cud de cataloga spred di words, feh mek me known?
Cud de bigger heads, uplift de I
Show me de way - OR – mi - jus - born – fi – dead

English translation

I was born digital but it is not a simple matter
From the time I was born, I was isolated, not considered
good enough
Because I do not conform to industry standards
But I want to be accepted in the same way you have
accepted Google
Could cataloguers please change their manner of
cataloguing
So I can be found, acquire legitimacy or I might just
become grey literature.

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References

- Anasi SN, Ibegwam A and Oyediran-Tidings S (2013) Preservation and dissemination of women’s cultural heritage in Nigerian university libraries. *Library Review* 62 (8/9): 472–491. Available at: <http://dx.doi.org/10.1108/LR-11-2012-0126> (accessed 23 October 2014).
- Ballestro J and Howze PC (2005) When a gift is not a gift: Collection assessment using cost-benefit analysis. *Collection Management* 30(3): 49–66. DOI: 10.1300/J105v30n03_05
- Bilbao-Osorio B, Dutta S and Lanvin D (eds) (2014) *The Global Information Technology Report 2014: Rewards and Risks of Big Data*. Available at: www3.weforum.org/docs/WEF_GlobalInformationTechnology_Report_2014.pdf (accessed 26 April 2015).

- Boxill I (2014) Leveraging the creative industries for development in the Caribbean. Feature Address In: *Third symposium in the Alphonse 'Arrow' Cassell memorial lecture series*, Montserrat, 13 November 2014.
- Copyright Amendment Bill (2015) Available at: <http://www.japarliament.gov.jm> (accessed 17 April 2015).
- Edward S (2011) *Interview: Joanne Gail Johnson's Window into Caribbean Children's Publishing*. Available at: www.summeredward.com/2011/03/interview-joanne-gail-johnsons-window.html (accessed 5 February 2015).
- Erway R (2010) *Defining 'Born Digital': An Essay*. Available at: www.oclc.org/research/activities/hiddencollections/borndigital.pdf (accessed 26 April 2015).
- Forbes C (2013) Jamaican children reading: A reflection. *Small Axe*. Available at: <http://smallaxe.net/wordpress3/discussions/2013/08/24/jamaican-children-reading> (accessed 10 October 2014).
- Girvan N (2000) Creating and recreating the Caribbean. In: Hall K and Benn D (eds) *Contending with Destiny: The Caribbean in the 21st Century*. Kingston, Jamaica: Ian Randle, pp. 31–36.
- Jones BM (2003) *Hidden Collections, Scholarly Barriers: Creating Access to Unprocessed Special Collections Materials in North America's Research Libraries*. A White Paper for the Association of Research Libraries Task Force on Special Collections, 6 June. Available at: <http://www.arl.org/storage/documents/publications/hidden-colls-white-paper-jun03.pdf> (accessed 19 April 2015).
- Lawrence GG, Kehoe WR, Rieger OY, et al. (2000) *Risk Management of Digital Information: A File Format Information*. Washington, DC: The Digital Library Federation. Available at: www.clir.org/pubs/reports/pub93/contents.html (accessed 15 February 2015).
- Lidman T (2004) Our cultural heritage and its main protagonists: Libraries and archives, a comparative study. *Liber Quarterly* 14(3/4). Available at: <http://liber.library.uu.nl/index.php/lq/article/view/7790/7910> (accessed 20 March 2015).
- McDonald I (2000) Caribbean creative achievement: Preserving the record/extending the influence. In: Hall K and Benn D (eds) *Contending with Destiny: The Caribbean in the 21st Century*. Kingston, Jamaica: Ian Randle, pp. 530–533.
- Manaf ZA (2007) The state of digitisation initiatives by cultural institutions in Malaysia: An exploratory survey. *Library Review* 56(1): 45–60. Available at: <http://dx.doi.org/10.1108/00242530710722014> (accessed 10 April 2015).
- Ramchand K (2000) The lost literature of the West Indies. In: Hall K and Benn D (eds) *Contending with Destiny: The Caribbean in the 21st Century*. Kingston, Jamaica: Ian Randle, pp. 513–529.
- Renwick C (2011) Caribbean digital library initiatives in the twenty-first century: The digital library of the Caribbean (dLOC). *Alexandria* 22(1): 1–18.
- Sancho TA (1973) The importance of our literature in Caribbean secondary education. *Kaie* 11: 78–84.
- Schmiesing A and Hollis DR (2002) The role of special collections departments in humanities undergraduate and graduate teaching: A case study. *Libraries and the Academy* 2(3): 465–480. DOI: 10.1353/pla.2002.0065.
- Smith A (2007) Valuing preservation. *Library Trends* 56(1): 4–25.
- Temper TH (2005) Challenges for the future of library and archival presentation. *Library Resources and Technical Service* 49(1): 32–39.
- Traister D (2010) Is there a future for special collections? And should there be? A polemical essay. *RBM: A Journal of Rare Books, Manuscripts and Cultural Heritage* 1(1): 54–76.
- UNESCO (2003) *Charter on the Preservation of the Digital Heritage*. Available from: portal.unesco.org (accessed 5 May 2015).
- Whyllie M (1998) Jamaican drumming styles. *Caribbean Quarterly* 44(3/4): 63–66. Available at: www.jstor.org/stable/40654044 (accessed 27 April 2015).
- World Bank (2015) *Jamaica Overview*. Available at: www.worldbank.org/en/country/jamaica/overview (accessed 5 May, 2015).

Author biography

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Digitization of Indian manuscripts heritage: Role of the National Mission for Manuscripts

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Abstract

India has the distinction of having one of the most ancient, richest and largest collections of manuscripts in the world. These manuscripts which are available in different forms, languages, scripts and cover a wide range of subjects are a powerful medium for the preservation of Indian cultural heritage. But the preservation of these manuscripts is a serious problem for the custodians of manuscripts because of the hot and humid climate of the country. In this context the present paper gives an account of the commendable efforts rendered by the National Mission for Manuscripts since its inception in 2003 by establishing and strengthening 57 manuscript resource centres, 50 manuscript conservation centres and developing a National Database of Manuscripts. It also presents the current status of digitization of Indian cultural heritage in the form of manuscripts starting from its collection to the development of a Digital Manuscript Library for global access.

Keywords

Manuscripts heritage, National Mission for Manuscripts, manuscript resource centres, manuscript conservation centres, digitization, Digital Manuscript Library

Introduction

India has sustained a glorious tradition of preserving knowledge through oral and written communication since time immemorial. A variety of manuscripts in different forms have been in use since ancient days, ranging from clay tablets to copper plates and from leaves of trees to prepared skins of animals. A good number of manuscripts relating to Art and Architecture, Astronomy, Mathematics, Purana, Vyakarana, Tantra, Yoga, Philosophy and Medicine date back several hundreds of years and are still available for reference today. It is amazing to discover how scholars packed so much information into what they wrote on these manuscripts. As Indian ancient cultural heritage is preserved in manuscripts, these are regarded as valuable sources of information for the reconstruction of the history and culture of the country. Composed in different Indian languages, these manuscripts are spread all over the country in different institutions, libraries, monasteries, temples and in several private

collections. The manuscripts being organic in nature are quite susceptible to deterioration caused by changes in climatic conditions, bio-deterioration and also by constant handling. But the advent of information and communication technologies brings unprecedented changes in the entire process of information generation, organization, and retrieval as well as in the process of preservation. Digitization, an offspring of the technological innovation has emerged as a viable tool for long-term access to the documentary heritage. Digitization of manuscripts promises documentation and preservation of original texts and at the same time facilitates greater access for scholars and researchers. With this backdrop, this paper discusses the digitization of Indian manuscripts, emphasizing

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the efforts of the National Mission for Manuscripts (NMM) in digitizing the manuscripts heritage and thereby developing and maintaining a knowledge base available in manuscript form for generations to come. The NMM is the first national level comprehensive initiative in the world that caters to the need of conserving manuscripts and disseminating knowledge contained therein.

Manuscript: The concept

The term 'manuscript' is derived from the Latin word *manuscriptus* which is a combination of two words, that is *manu* meaning by hand and *scriptus* meaning written. So etymologically manuscript means written by hand. In the classical sense the term manuscript refers to a document, handwritten by an author. Manuscripts are found in every part of the world where human beings put their thoughts and experience into written form. In archaeological terms a manuscript is defined as any early writing made on stone, metal, wood, clay, linen, bark, leaves of trees and prepared skins of animals. Hand writings of any kind whether on paper or any other material as opposed to printed materials are called manuscripts (Cornish, 1970). In general, the term manuscript refers to handwritten materials including ancient inscriptions on clay tablets and stone, medieval and renaissance manuscripts of books and codices and modern manuscripts such as literary manuscripts, historical manuscripts and personal papers. There are also no restrictions on the forms of writing whether it is phonetic, pictorial or ideographic. According to the *Chambers Dictionary*, 'a manuscript is a book or document written by hand before the invention of printing'. According to the *Encyclopedia of Information and Library Science*, a manuscript is defined as 'a written document that is put down by hand, in contrast to being printed or reproduced by some other way' (Corea, 1993). The Anglo-American Cataloguing Rules 2nd edition (AACR2) defines manuscripts as 'materials of all kinds including manuscript books, dissertations, letters, speeches, legal papers and collection of such manuscripts' (Gorman and Winkler, 1988). However, the definition given in AACR2 seems to be more illustrative of the type of manuscripts and for the present paper the term manuscripts includes a variety of writing mediums such as palm leaf, bamboo leaf, sanchipat, birch-bark, stone, wood and paper: the evidence of which is found in various manuscript resource centres in India. The digitization section of this paper includes in its ambit only palm leaf manuscripts.

Efforts to preserve and catalogue manuscripts in India prior to independence

Manuscripts were the sole medium for the transmission of knowledge, and were the predominant writing medium before the advent of paper. As such, in classical and medieval India, the house of every teacher had a good collection of manuscripts. Manuscripts were also collected by the rulers of different states, including the Mughal emperors, religious institutions, monasteries (*mathas*) of different sects and the Jain *bhandaras*. The credit for listing the manuscripts in India for the first time goes to a Jain monk who compiled the manuscripts of Patan, Cambey and Bharauch in the year 1383 under the title *Brihattipanika* which is still preserved in the Shantinatha Bhandara, Patan. Recognizing the works of Kavindracharya of Varanasi, who compiled the subject-wise classified catalogue of 2192 manuscripts between 1628 and 1688, Mughal emperor Shahjahan conferred on him the title of 'Sarvavidyanidhana'. King Tipu Sultan of Mysore had built up a library of oriental manuscripts in Arabic, Persian and Hindustani languages. The manuscripts from Tipu's library were studied and catalogued by General Charles Stewart and the catalogue was published by Cambridge University Press under the title *A Descriptive Catalogue of the Oriental Library of the Late Tipu Sultan of Mysore* (Stewart, 1809). With the establishment of the East India Company's rule in India, the systematic survey of manuscripts, their collection, preservation, and cataloguing gained further momentum. The British rulers, who took upon themselves the cause of education and of patronizing Indian traditional knowledge systems, directed their attention towards the Indian literary heritage preserved in manuscripts. During the British regime the Asiatic Society in Calcutta, established in 1785, undertook the work on manuscripts collection and documentation. Several government collections gradually came into existence in Calcutta, Varanasi, Pune and Madras. The work of Sir William Jones, Lady Jones and Sir Charles Wilkins in the cataloguing of manuscripts is also praiseworthy and was published in the *Philosophical Transactions of the Royal Society of London* during 1798 and 1799 respectively. Another noteworthy contribution is by Pandit Ramagovinda Tarkaratna who, under the instructions of James Prinsep, compiled in 1838 a 149-page catalogue of 3000 manuscripts available in the holdings of the College of Fort William Library, the College of the Asiatic Society of Bengal and Banaras Sanskrit Colleges. In the 19th and 20th centuries, survey, search and cataloguing of manuscripts were carried on by both Indian and European experts in various regions of the country, particularly

in western, central and northern regions. The names of G Buhler, F Kielhorn, Peter Peterson, RG Bhandarkar, SR Bhandarkar, who listed many manuscripts between 1867 and 1905 AD, deserve special mention in the field of cataloguing of manuscripts. Raja Rajendralala Mitra also performed a great job in cataloguing manuscripts between 1871 and 1891, and after his death his incomplete work was taken over by MM Harprasad Sastri and published between 1898 and 1915 in six volumes.

National agencies working for preservation of manuscripts

Recognizing the richness of Indian literary heritage preserved in manuscripts, the Government of India has taken the initiative to strengthen a number of national level institutions that are particularly devoted to the preservation of Indian manuscripts. Those institutions are:

- The National Archives of India (NAI), New Delhi
- National Library of India, Kolkata
- Indira Gandhi National Centre for the Arts (IGNCA), New Delhi

NAI is the repository of the non-current records of the Government of India and its predecessor, where records are preserved for the use of the administration and scholars. The aims of NAI are to conserve records from all over the country; to encourage the scientific management and greater liberalization of access to archival holdings; to develop greater professionalism and a scientific temper among creators, custodians and users, and aid in spreading a feeling of national pride in the documentary cultural heritage of India and ensuring its preservation for posterity. NAI is making earnest efforts to ensure longevity of the documents in its custody through preventive, curative and restorative processes for which the Department set up the Conservation Research Laboratory in 1941. Since its inception, it has been engaged in research and development work like developing indigenous techniques for restoration, testing of materials required for restoration and storage (www.nationalarchives.nic.in).

The National Library of India, Kolkata was established in 1948 with the passing of the Imperial Library Act, 1948 and has the status of an institution of national importance. It is engaged in the task of acquisition and conservation of all significant production of printed material. It has a rich collection of Persian, Sanskrit, Arabic and Tamil manuscripts and also rare books. It is the recipient library under the Delivery of Books and Newspapers (Public Libraries) Act, 1954 and the repository library for South Asia. It holds

more than 6558 volumes of paper as well as palm leaf manuscripts written in different languages and scripts. The Arabic and Persian manuscripts bear beautiful illustrations and fine calligraphy (www.nationallibrary.gov.in). The Library also undertakes the conservation and digitization of manuscripts of national importance as well as its own holdings.

IGNCA was established in 1987 as an autonomous institution under the Ministry of Culture, Government of India. It is the National information system and Databank in the fields of Arts, Humanities and Cultural Heritage. The Indian Cultural Heritage Resource Centre of IGNCA which is known as 'Kala Nidhi' division, is chiefly responsible for the compilation of unpublished manuscripts of Indian and foreign collections and from private and public libraries. This unit has taken an initiative to bring under one roof primary sources of Indian tradition, lying scattered, fragmented, inaccessible and in danger of extinction. This division of IGNCA has collected sizable numbers of manuscripts from east, west, north, north-east, south and central regions of India and began microfilming. To date this division has more than 20,152 film rolls of manuscripts (approx. 12,751,057 folios with 12,275 digitized rolls) in its possession (www.ignca.nic.in).

National Mission for Manuscripts

The National Mission for Manuscripts (NAMAMI) is an autonomous organization under the Ministry of Culture, Government of India. The Mission was initiated in February 2003 by the Ministry of Tourism and Culture, Government of India, and the Indira Gandhi National Centre for the Arts (IGNCA), New Delhi is the nodal agency for the execution of this project. The Indian manuscripts heritage covers a variety of themes, textures, scripts, languages, calligraphies, illuminations and illustrations. Together, they constitute the 'memory' of India's history, heritage and thought. NAMAMI aims to locate, document, preserve and digitize Indian manuscripts and make these accessible to connect India's past with its future and to create a national resource base for manuscripts for enhancing their access, awareness and use for educational purposes. The present study is basically confined to the activities of NMM with special reference to the digitization of Indian manuscripts.

Methodology of the study

The present study is primarily based on the activities of the Mission with regard to growth of manuscript resource centres, conservation centres, documentation of manuscripts, diverse forms and nature of Indian

manuscripts with a special reference to the digitization aspect of manuscripts. The required data have been collected from the Annual Reports of the Mission accessible through the website (www.namami.org) and also available in hard copy. Data related to the types of manuscripts, languages, scripts, subject area have been collected from the respective web pages of the resource centres under NMM. Keeping in view the objectives of the study, obtained data have been transferred to tables and figures and finally analyzed to get the results.

Objectives of the study

The study is primarily designed to focus on the following objectives:

- To show the growth and distribution of manuscript resource centres (MRCs), manuscript conservation centres (MCCs) along with manuscript collections across various zones and states of India.
- To show the diverse nature of Indian manuscripts available in different forms, languages, scripts and subjects.
- To focus on the National Database of Manuscripts and the National Electronic Catalogue of Manuscripts.
- To make an exclusive assessment of the activities of NMM in respect of the following two aspects:
 1. digitization of manuscripts and its status
 2. development of a Digital Manuscripts Library.

Literature review

A number of studies regarding the digitization of manuscripts have been conducted in different settings, different times and for different manuscript libraries. For this paper some significant studies in the field that focus on different aspects of manuscript digitization in the Indian context have been thoroughly reviewed. Kumar and Shah (2004) have discussed in detail the Scindia Oriental Research Institute (SORI) a pioneer manuscript library of India. Some 4190 manuscripts of importance have been microfilmed by IGNCA at SORI and it has been recognized as one of the MRCs for accessioning, cataloguing and launching of an awareness programme in Madhya Pradesh. Kumar and Shah (2004) also discussed UNESCO's digitization project 'The Memory of the World' initiated in 1993 and the manuscript digitization pilot project 'Down Memory Lane' at the

National Library of India. Majumdar (2005) has described the history of artistic heritage, history of literary heritage and recorded knowledge of India and viewed that past literary heritage in the form of manuscripts available on palm leaves, cotton, silk, wood, bamboo and copper plates and has also discussed the initiatives taken by the Indian Government in introducing the NMM towards preserving and digitizing these culturally significant works. Ramana (2005) has given a brief overview of India's largest and ancient manuscript collections, the forms and places of availability of these manuscripts. He also described some indigenous methods of preserving palm leaf manuscripts and has highlighted the important benefits of digital preservation in dissemination of information, the manuscript collections of the NLI and the process of digitization of manuscripts at NLI. Nair (2006) has depicted the valuable recorded knowledge housed in different museums, archives, art galleries and manuscript libraries that are affiliated to Kerala University and has pointed out that development of a campus-wide information system and opting for digitization of the valuable content would help their wider accessibility. Maltesh et al. (2007) have discussed digitization of cultural heritage, particularly manuscripts of India and other parts of the world including the UNESCO project 'Memory of the World', Czech National Library, National Library of Australia, etc. This paper also highlights the organizational role of metadata for information retrieval and access as regards manuscripts. Kumar and Sharma (2007) pointed out that digitization of manuscripts in the Indian set up is a bigger challenge than it appears. However, in the area of manuscripts, the Department of Culture, GOI made an ambitious plan in 2003 by constituting the National Mission for Manuscripts to preserve, conserve and digitize manuscripts for posterity and described how Punjab University, Chandigarh is utilizing NMM guidelines to digitize its multilingual holdings. Devi (2008) has described the importance of the Manipur Manuscripts collection and the necessity to preserve the collection in digitized form for future generations. Mazumdar (2009) has described the manuscript collection in Assam as well as initiatives for digital preservation in Assam with reference to the Krishna Kanta Handique Central Library of Gauhati University which has about 4500 valuable manuscripts written on sanchipat, tulapat and paper. Gaur and Chakraborty (2009) have asserted that the glorious past of Indian culture lies in the ancient manuscripts which represent the basic historical evidence with great research value. It is estimated that India possesses more than five million manuscripts, making her the largest repository of manuscript wealth

in the world. In order to preserve this knowledge resource and to make these accessible to scholars, IGNCA initiated the most important manuscript micro-filming programme in 1989. Gaur and Chakraborty (2009) also discussed topics like the tradition of preservation and access in India, institutional efforts in the fields of preservation and access, initiatives taken by IGNCA and NMM and challenges of manuscript preservation in the 21st century. Saikia and Kalita (2011) have highlighted the digitization process of manuscript collections in the Krishna Kanta Handiqui Library, Guahati, Assam which has 4500 copies of manuscripts on important branches of knowledge written in Assamese, Sanskrit, Bengali, Nepali and Tibetan scripts. The study also describes digitizing tools like scanners, digital cameras, image-processing software, file compression and OCR software along with digital library software like GSDL, DSpace and Eprints as well as the workflow of digitizing manuscripts. Londhe et al. (2011) have focused on the technical know-how required for digitization of manuscripts, discussed the digitization process of manuscripts adopted in the Jayakar Library, University of Pune in India and also evaluated the digitization software used in this project. Singh (2012) has depicted cultural heritage as the symbolic presence that integrates the history, traditions and culture of a country and examined the viability of preserving India's cultural heritage resources in a digital world to make it globally accessible.

Observation and analysis

Setting up manuscript resource centres

The NMM works with the help of 57 manuscript resource centres (MRCs) spread across the country. These MRCs are well-established Indological institutes, museums, libraries, universities and non-government organizations and function as the Mission's coordinating agencies in their respective regions. It is observed from Figure 1 that the highest numbers of MRCs (17) function under the North Zone. MRCs under this zone are distributed over six states plus two MRCs function in the National Capital Territory of Delhi. The South Zone covers 15 MRCs, whereas East Zone covers 13 MRCs, West Zone covers 9 MRCs and the Central Zone covers 3 MRCs. The zone-wise distribution of MRCs is listed in Appendix 1 and shows the number of states included in each zone along with the number of manuscripts available in each MRC that functions under each zone.

Figure 2 shows the zone-wise distribution of manuscripts and it is found that the highest number of manuscripts are available in North Zone, i.e. 421,409 (31%),

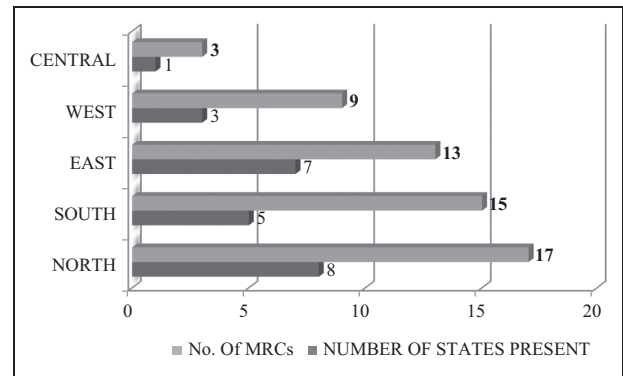


Figure 1. Distribution of MRCs across various zones.

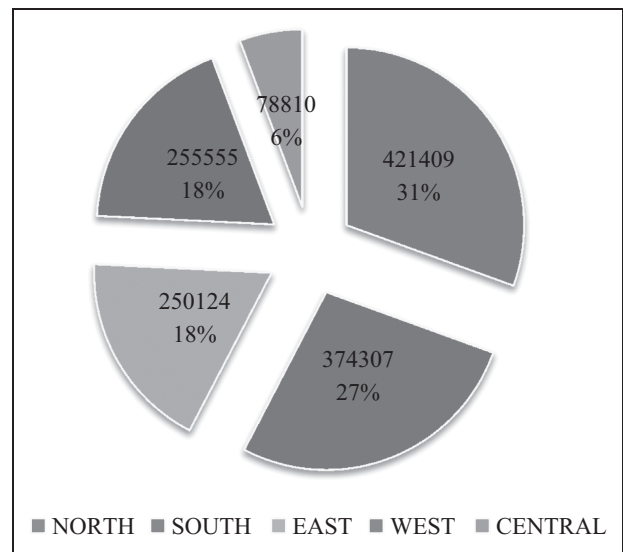


Figure 2. Distribution of manuscript collections across various zones.

followed by South Zone 374,307 (27%), East Zone 250,124 (18%), West Zone 255,555 (18%) and Central Zone 78,810 (6%) respectively. So it can be interpreted that both in terms of number of manuscripts and MRCs North Zone is ahead of other four zones.

Setting up manuscript conservation centres

The Mission has identified 50 manuscript conservation centres (MCCs) across the country for the conservation of manuscripts. These MCCs are the nodal centres for all preservation and conservation work relating to manuscripts that work towards fulfilling its motto 'conserving the past for the future'. These centres provide services such as training in preservation and conservation, workshops on preventive and curative conservation of manuscripts in different institutions and private collections. For this purpose a standard methodology comprising the positive aspects of both traditional Indian practices and

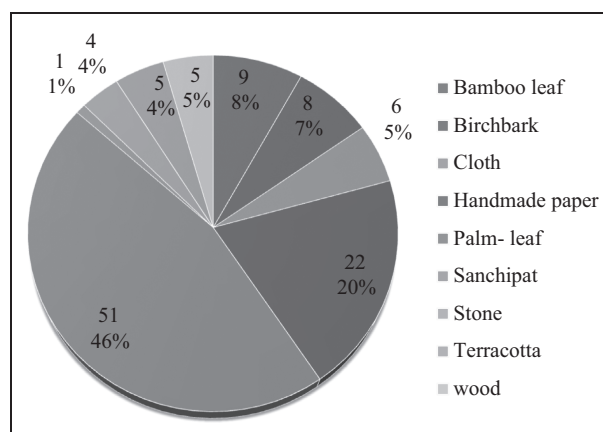
Table 1. State-wise distribution of MRCs & MCCs.

Sl. No.	Name of the states	Number of MRCs	% of MRCs	Number of MCCs	% of MCCs
1	Andhra Pradesh	2	3.51	3	6
2	Arunachal Pradesh	0	0.00	1	2
3	Assam	3	5.26	2	4
4	Bihar	5	8.77	3	6
5	Chhattisgarh	1	1.75	1	2
6	Delhi (NCT)	2	3.51	2	4
7	Gujarat	3	5.26	1	2
8	Haryana	1	1.75	1	2
9	Himachal Pradesh	2	3.51	1	2
10	Jammu & Kashmir	2	3.51	1	2
11	Karnataka	5	8.77	6	12
12	Kerala	3	5.26	5	10
13	Madhya Pradesh	3	5.26	1	2
14	Maharashtra	4	7.02	1	2
15	Manipur	1	1.75	1	2
16	Odisha	2	3.51	4	8
17	Puducherry (UT)	1	1.75	0	0
18	Punjab	1	1.75	1	2
19	Rajasthan	1	1.75	3	6
20	Tamil Nadu	4	7.02	2	4
21	Tripura	1	1.75	1	2
22	Uttar Pradesh	7	12.28	6	12
23	Uttarakhand	2	3.51	2	4
24	West Bengal	1	1.75	1	2
	Total	57	100	50	100

modern scientific methods is followed. Table 1 provides the number and percentage-wise availability of MCCs as well as MRCs in the different states as well as union territories of India. Out of a total of 29 states in India, MRCs function in 21 states and in 2 union territories, namely Delhi and Puducherry, whereas MCCs are distributed over 22 states and two MCCs function in the National Capital Territory of Delhi. It is observed that both MRCs and MCCs are distributed over most of the states of India under the ambit of NMM for furthering its activities relating to manuscripts. Uttar Pradesh is the state in which the highest percentage (12.28%) of MRCs function whereas Bihar and Karnataka jointly occupy the second position with 8.7% of resource centres. Similarly in the case of MCCs, Uttar Pradesh (UP) and Karnataka occupy the first position with 12% of MCCs followed by Kerala with 10% of MCCs.

Form-wise distribution of manuscripts across MRCs under NMM

Figure 3 gives an idea of the various forms of manuscripts that are available in the MRCs and these are bamboo leaf, birch bark, cloth, hand-made paper, palm leaf, stone, terracotta and wood. It is observed

**Figure 3.** Percentage-wise distribution of various forms of manuscripts across MRCs.

that out of 57 MRCs, palm leaf manuscripts are available in the maximum resource centres (51) that contribute to 46% of the total forms of manuscripts. So it is interpreted that though there were other forms of writing materials, palm leaf was the predominant one. The growth of palm trees in abundance in different parts of the country is the possible cause for plentiful use of palm leaves than other forms of manuscripts.

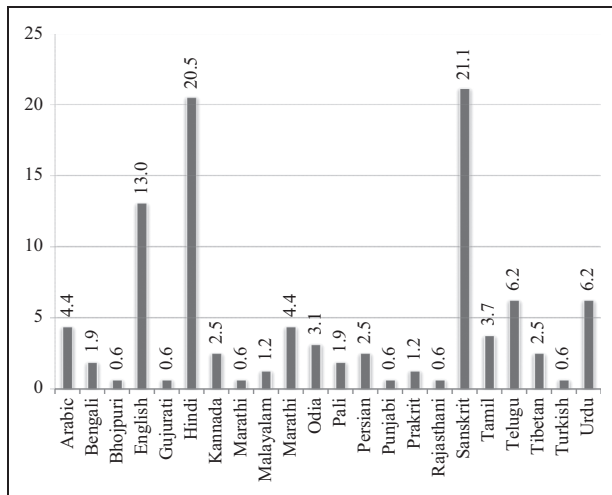


Figure 4. Language-wise distribution of manuscripts across MRCs in percentage.

Language-wise distribution of manuscripts across MRCs under NMM

Figure 4 shows the language-wise distribution of manuscripts under NMM at various MRCs. It is observed that manuscripts are available in 22 important languages such as Arabic, Bengali, Bhojpuri, English, Gujarati, Hindi, Kannada, Maithili, Malayalam, Marathi, Odia, Pali, Punjabi, Persian, Prakrit, Rajasthani, Sanskrit, Tamil, Telugu, Tibetan, Turkish, and Urdu. Out of the total manuscripts under NMM covering all the MRCs the majority of the manuscripts are available in Sanskrit and Hindi languages, contributing to (21.12%) and (20.50%) respectively out of the total percentage for all the languages. In languages like Bhojpuri, Gujarati, Maithili, Punjabi, Rajasthani and Turkish, much fewer (0.62% in each language) numbers of manuscripts are seen in various MRCs.

Script-wise distribution of manuscripts across MRCs under NMM

Scripts denote the writing systems employed by languages to represent the sounds which form the phonetic base of the language. Each language has its own representation for the sounds and thus has its own script, whereas some of the languages have a common script. Very often it is found that manuscripts are written in one language using the script of another language; for example manuscripts are seen to be written in the Odia language using Devanagari script. From Figure 5, it can be observed that manuscripts have been written using many scripts such as Bengali, Devanagari, English, Grantha, Gaudi, Gujarati Newari, Odia, Sharada, Telugu, Tamil and Tibetan scripts.

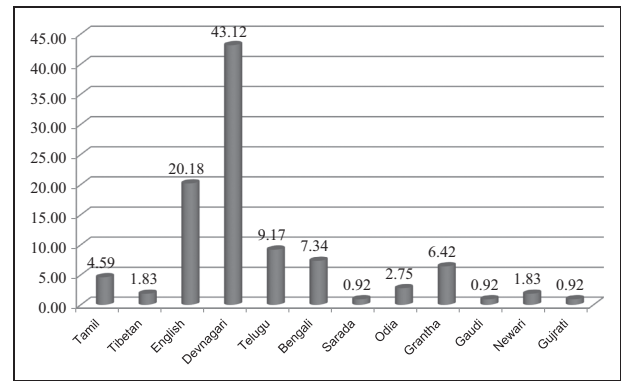


Figure 5. Script-wise distribution of manuscripts across MRCs in percentage.

Out of all the scripts, the percentage of manuscripts written in Devanagari script are highest (43.12%) in comparison to other scripts because Devanagari is the common script used both for Hindi and Sanskrit languages.

Subject-wise distribution of manuscripts across MRCs under NMM

From the subject-wise analysis of the manuscripts (Figure 6) it can be observed that manuscripts were written on a variety of subjects. It indicates that authors of manuscripts had profound knowledge of different subject aspects starting from Veda/Vedanta to Literature and Linguistics. The study of the content of the manuscripts shows that the highest percentages of MRCs cover manuscripts on Dharma Shastra (13.4%) followed by Arts (8.2%), Ayurveda, Culture and Literature (7.7%), Linguistics (6.7%), Veda (6.2%), Grammar and History (5.7%), Ecology, Philosophy and Mathematics (4.6%), Astrology, Purana, Vedanta and Anthropology (3.6%), Upanishad (2.6%) respectively.

Growth of manuscript documentation under NMM

One of the significant contributions of the NMM is the detailed documentation of manuscripts in India for creating a National Electronic Database of Manuscripts to provide scholars with a common portal for reference. For this purpose the Mission receives data on manuscripts from three different sources:

- National Survey followed by Post-Survey
- Manuscript Resource Centres
- Manuscript Partner Centres (MPCs) or Private Collections

National Survey is an intensive state-wide programme with the aim to locate every manuscript in the

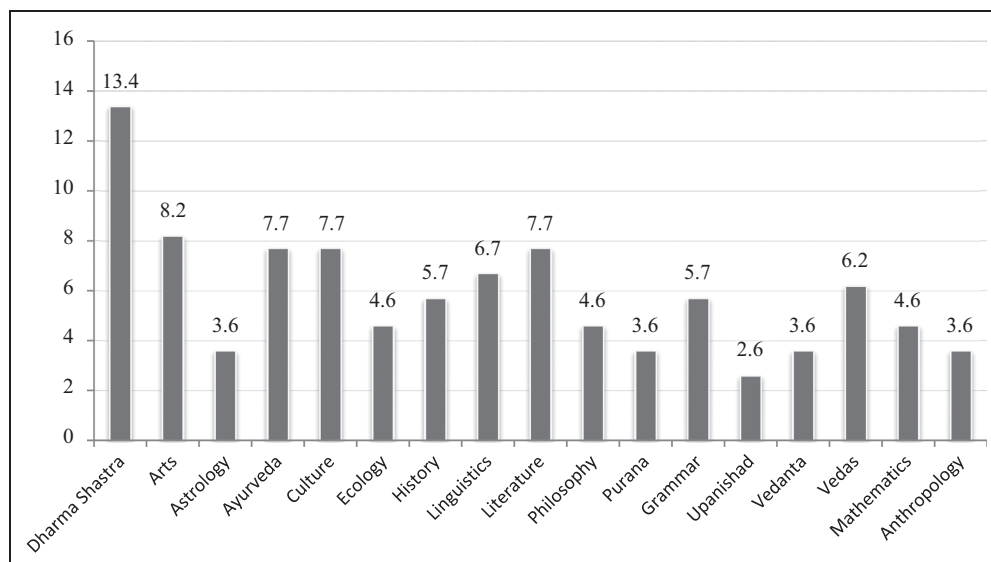


Figure 6. Subject-wise distribution of manuscripts across MRCs in percentage.

Table 2. Year-wise growth of documentation of manuscripts.

Year	Data documented		Cumulative/Progressive data			Growth rate (GR)	Doubling time (DT)
	No.	%	No.	%	LOG		
2003–2004	88,569	2.30	88,569	2.30	11.392		
2004–2005	202,563	5.27	291,132	7.57	12.582	1.19	0.58
2005–2006	770,111	20.02	1,061,243	27.59	13.875	1.29	0.54
2006–2007	703,196	18.28	1,764,439	45.88	14.383	0.51	1.36
2007–2008	813,151	21.14	2,577,590	67.02	14.762	0.38	1.83
2008–2009	276,271	7.18	2,853,861	74.20	14.864	0.10	6.81
2009–2010	214,114	5.57	3,067,975	79.77	14.937	0.07	9.58
2010–2011	211,053	5.49	3,279,028	85.26	15.003	0.07	10.42
2011–2012	215,492	5.60	3,494,520	90.86	15.067	0.06	10.88
2012–2013	194,749	5.06	3,689,269	95.92	15.121	0.05	12.85
2013–2014	156,779	4.08	3,846,048	100	15.163	0.04	16.66
Total	3,846,048	100			Mean	0.38	7.15

country with a special emphasis on undocumented private collections. In Post-Survey each and every repository unearthed during the National Survey is revisited to document every individual manuscript contained therein. It provides an overview of the number of manuscript repositories in a district to document each manuscript in each repository, in every district, every state and eventually the country. The manuscripts are documented through the Mission's datasheet known as Manus Data Sheet that covers detailed bibliographic information such as title, author, commentary, language, script, subject, name of repository, number of folios and other relevant details. After the collection of such information, these data are entered into the Manus Granthavali software at the MRCs or MPCs and finally the detail information is sent to the Mission.

Under this scheme it is observed that the highest number of manuscripts has been documented during the year 2007–2008 (813,151) and the total number of manuscripts received for documentation is 3,846,048 (Table 2). The data processing status as on 31 March 2014 is presented below:

- Total data received in electronic format = 2,868,000
- Total data received in hard copy = 978,000
- Total data edited = 3,190,000
- Total data released on website = 3,123,000 (www.namami.org as on 31 March 2014)

The National Electronic Database of Manuscripts is the first online catalogue of Indian manuscripts, where a particular manuscript can be searched on the

basis of its title, author, subject or material. A particular repository can also be searched on the basis of name of district and state.

NMM and digitization

In order to create a digital resource base for manuscripts, the NMM initiated a pilot project in 2005 and developed a consistent policy for digitization. Since there is a large corpus of manuscripts available in the country, NMM selects manuscripts for digitization with the following parameters:

- manuscripts that are unique and with rare heritage value (where it is possible that without preservation, it would be lost);
- manuscripts that deal with disciplines relating to ancient knowledge systems and belonging to a relatively antique period;
- material where the users are wide-spread geographically and temporally;
- material where the retrieval of information is cumbersome and copies of such material cannot be supplied to the users quickly and easily.

Along with the above parameters for selection of manuscripts, NMM adopts the following procedure for digitization of manuscripts.

Benchmarking. Benchmarking is the process undertaken at the beginning of a digitization project that attempts to set the levels used in the capture process to ensure that the most significant information is captured. The Mission has developed a guideline known as 'Guidelines for Digitization of Manuscripts' which covers the detailed guidelines for scanning like image quality, resolution, bit depth, image enhancement process, compression, output specification, etc.

Naming convention and image formats for scanned images. The naming of images is an important issue that is handled by the Mission. Each manuscript digitized is already documented on the Mission's electronic database and the metadata information for each manuscript scanned is identified by giving it a manuscript identification number (Manus ID) which is generated by the Mission's Manus Granthavali Software. The Manus ID and the accession number (from the institute/repository catalogue where the manuscript is kept) and where the digitization is taking place, form the basis of naming the digitized images of each manuscript page. Similarly four image formats namely master image (TIFF format), clean image (TIFF format), access image (JPEG format),

and thumbnail image (JPEG format) are considered for all the scanned images.

Quality assurance. Quality assurance refers to the series of quality control analyses of the manuscripts during the process of digitization. It is a method of verifying that all the digital reproduction of manuscripts is up to the prescribed standard defined by NMM. Ideally quality assurance is performed on all master images and their derivatives with regard to size and resolution of image, file format, image mode, bit depth, tonal values, brightness, contrast, sharpness, interference, orientation, missing lines or pixel, text legibility, cropped and border areas, etc.

Metadata creation. For each digitized manuscripts two sets of metadata are created namely subject metadata and technical metadata. While subject metadata are generated according to the specific Manus Data Record using Manus Granthavali that covers 24 meta-elements, technical metadata describes the features of the digital file. Technical metadata is automatically generated and assigned to the image file at the time of creation and the data elements covered are: file name, date created, date modified, equipment used, image format, width, height, colour mode, etc. The illustration in Chart 1 depicts the sequential view of the complete digitization process maintained by NMM starting from material selection to the retrieval of manuscripts.

Manuscript digitization status of various institutions

Table 3 shows the institutions covered under NMM's digitization project. It is observed that NMM has taken up the digitization work of 25 MRCs distributed over 11 states and two MRCs of Delhi – the National Capital Territory of India. The total number of digitized images of manuscripts that are available with the Mission is 18,556,462 up to 31 March 2014. The highest number of pages (2,576,879) (13.9%) of manuscripts have been digitized from Allahabad Sankrit Sansthan, Varanasi, UP, followed by Odisha State Museum, Odisha (12.7%) and Bharat Itihas Sanshodhan Mandal, Pune from the state of Maharashtra (11.4%) respectively.

Figure 7 shows the percentage of digitized manuscripts over the states. It is observed that the highest percentage of manuscripts has been digitized from UP (34.68%) followed by Maharashtra (20.24%) and Rajasthan (13.88%) respectively. The state UP occupies the first position in terms of both number and

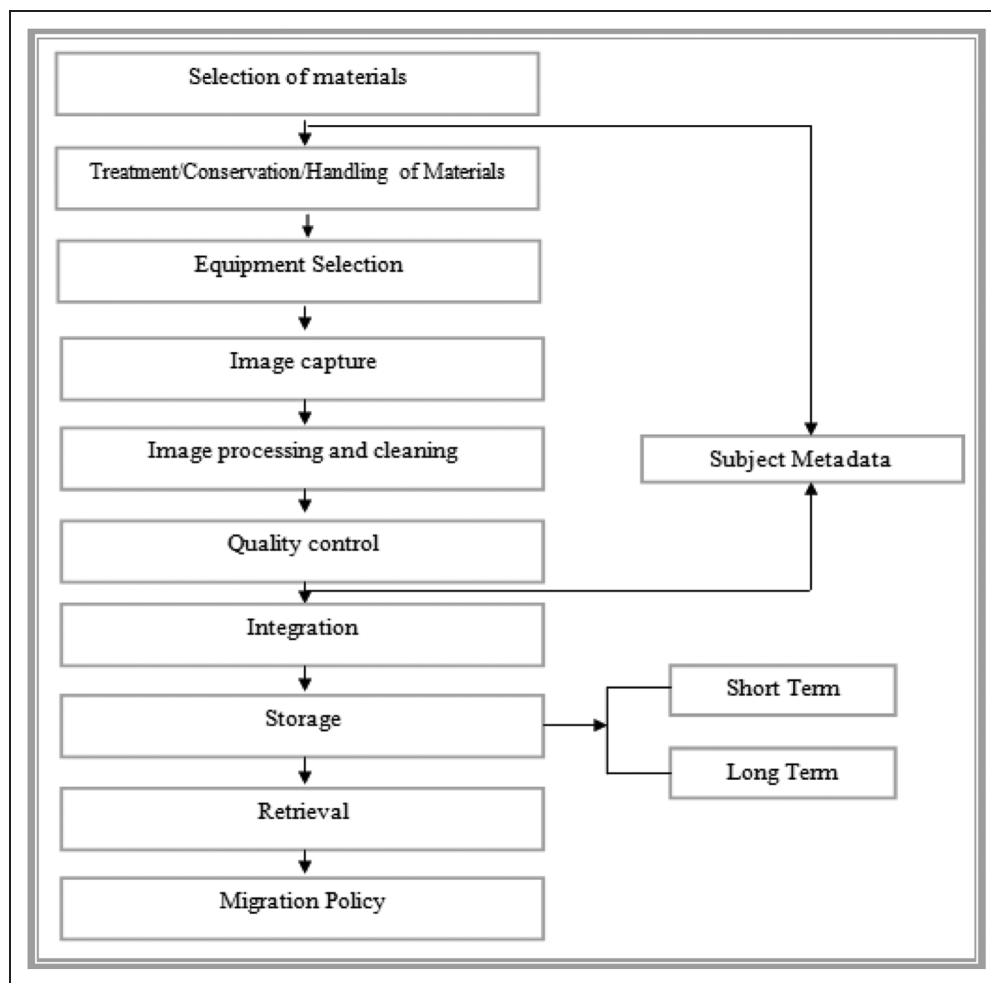


Chart – I. Digitization process chart.

pages of digitized manuscripts that denotes that more MRCs included for digitization are in UP.

Digital Manuscripts Library

For the first time in history, the Mission has taken significant steps to preserve digitally and make easily available almost all literary, artistic, and scientific works in India for research, education, and also for future generations. The Mission aims to set up a Digital Manuscripts Library of India which will foster creativity and easy access to all ancient and medieval Indian knowledge in the form of manuscripts of this country available at one place. This digital library will also become an aggregator of all the knowledge and digital contents created by other digital library initiatives in India. Very soon this library would provide a gateway to Indian Digital Manuscripts Libraries in Science, Arts, Culture, Music, Traditional Medicine, Vedas, Tantras and many more disciplines. NMM has collected hard disks containing digital images of 18,556,462 pages of manuscripts as of March 2014

and more will be received in future as the work of digitization progresses.

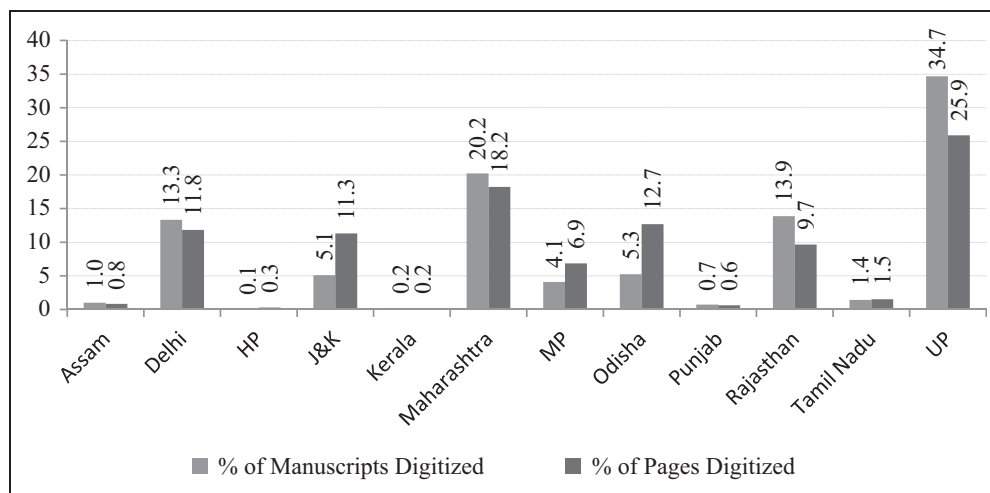
Conclusion

In India, the National Mission for Manuscripts (NMM) is the national level comprehensive initiative that caters to the need of preserving the knowledge held in millions of Indian manuscripts. The present study draws the following conclusions on the basis of the above observations in regard to the selected activities included for the present study:

- The National Mission for Manuscripts (NMM) is the first consolidated national effort devoted to the survey, documentation, preservation and digitization of manuscripts.
- The manuscript heritage of India contains the accumulated knowledge of Indian culture in diverse fields of study.
- The manuscript heritage of India is unique in terms of quantity, quality, variety, language, script, subject matter and calligraphy.

Table 3. Manuscript digitization status of various institutions.

Sl. No.	Name of institution	State	Manuscripts digitized		Pages digitized	
			No.	%	No.	%
1	AkhilBharatiya Sanskrit Parishad, Lucknow	Uttar Pradesh (UP)	12,887	6.2	458,376	2.5
2	Allahabad Sanskrit Sansthan, Varanasi	Uttar Pradesh (UP)	35,020	16.9	2,576,879	13.9
3	Allama Iqbal Library	Jammu & Kashmir	365	0.2	97,648	0.5
4	AnandashramSanstha, Pune	Maharashtra	14,673	7.1	1,249,151	6.7
5	Bhandarkar Oriental Research Institute, Pune	Maharashtra	35	0.0	22,679	0.1
6	Bharat ItihasSanshodhan Mandal, Pune	Maharashtra	27,302	13.2	2,111,105	11.4
7	BhogilalLeherchand Institute of Indology, Delhi	Delhi	22,907	11.0	1,064,900	5.7
8	French Institute of Pondicherry, Puducherry	Tamil Nadu	506	0.2	170,629	0.9
9	Dr Harisingh Gaur University, Sagar	Madhya Pradesh (MP)	1010	0.5	117,603	0.6
10	Himachal Academy of Arts, Shimla	Himachal Pradesh (HP)	225	0.1	55,751	0.3
11	Institute of Asian Studies, Chennai	Tamil Nadu	500	0.2	34,505	0.2
12	Jain Manuscripts, Lucknow	Uttar Pradesh	180	0.1	42,951	0.2
13	JamiaHamdard, New Delhi	Delhi	4200	2.0	1,010,273	5.4
14	KrishnakantHandiqui Library, Guwahati	Assam	2091	1.0	157,013	0.8
15	KundaKundaJnanapith, Indore	Madhya Pradesh (MP)	7506	3.6	1,156,373	6.2
16	Kutiyattam Manuscripts	Kerala	340	0.2	38,260	0.2
17	NMM Collection, New Delhi	Delhi	562	0.3	121,329	0.7
18	Oriental Research Library, Srinagar	Jammu & Kashmir (J&K)	10,147	4.9	1,973,816	10.6
19	Odisha State Museum, Bhubaneswar	Odisha	10,907	5.3	2,355,926	12.7
20	Rajasthan Oriental Research Institute	Rajasthan	28,813	13.9	1,792,864	9.7
21	Rashtriya Sanskrit Sansthan, Allahabad	Uttar Pradesh	1545	0.7	165,220	0.9
22	Siddha Manuscripts, Chennai	Tamil Nadu	1938	0.9	78,435	0.4
23	Sri Pratap Singh Library	Jammu & Kashmir (J&K)	74	0.0	28,536	0.2
24	Vrindavan Research Institute, Vrindavan	Uttar Pradesh (UP)	22,375	10.8	1,561,864	8.4
25	VVBIS & IS, Hosairpur	Punjab	1500	0.7	114,376	0.6
	Total		207,608	100	18,556,462	100

**Figure 7.** State-wise contributions in percentage.

- The NMM chiefly functions through MRCs and MCCs and it is found that at present there are 57 MRCs and 50 MCCs working under NMM.
- The Mission has developed a National Electronic Database of manuscripts which is the

first online catalogue of Indian manuscripts that provides information on every manuscript that has been documented through the Mission's datasheets and the catalogue covers various aspects of manuscripts such as title, commentary, language, script, subject, place

- of availability, number of pages, illustrations, date of writing, etc.
- The electronic data available in the NMM website stands at around 3,123,000 as of 31 March 2014.
- Digitization process, benchmarking and quality control parameters are well defined by NMM.
- The Mission has successfully digitized 18,556,462 pages of manuscripts from 25 leading MRCs under NMM.
- Establishing a digital library of manuscripts and linking the library with the manuscripts database for research purpose of the scholars is in progress.

Appendix I: Zone-wise distribution of MRCs

Sl. No.	Name of the Resource Centre	Zone	State	No. of Manuscripts	URL
1	Central Institute of Buddhist Studies, Leh	North	Jammu & Kashmir	9241	www.cibslleh.in
2	Directorate of State Archaeology, Archives and Museum, Srinagar	North	Jammu & Kashmir	28,137	http://jktourism.org
3	Himachal Academy of Arts, Culture and Languages	North	Himachal Pradesh	60,379	https://coral.uchicago.edu
4	Library of Tibetan Works and Archives, Dharamsala	North	Himachal Pradesh	95,998	http://www.ltwa.net
5	Kurukshetra University, Kurukshetra	North	Haryana	27,423	www.kuk.ac.in
6	VisweshvaranandaBiswabandhu Institute of Sanskrit and Indological Studies	North	Punjab	26,206	www.vvbis.puchd.ac.in
7	Uttaranchal Sanskrit Academy, Haridwar	North	Uttarakhand	25,927	http://www.euttaranchal.com
8	Rampur Raza Library, Rampur	North	Uttar Pradesh	43,300	www.razalibrary.com
9	Sampurnanand Sanskrit Visvavidyalaya,	North	Uttar Pradesh	51,330	www.ssvv.ac.in
10	AkhilBhartiya Sanskrit Parishad, Lucknow	North	Lucknow	2500	
11	H. N. B. Garhwal University, PauriGarhwal	North	Uttaranchal	741	http://www.srinagargarhwal.com
12	Vrindavan Research Institute, Vrindavan	North	Uttaranchal	45,206	www.vrindavanresearchinstitute.org
13	KM Hindi Institute of Hindi Studies and Linguistics, Agra	North	Uttar Pradesh	1400	www.dbrau.ac.in
14	Bhai Vir Singh SahityaSadana, New Delhi	North	Delhi	214	www.bvss.org
15	Institute of Tai Studies and Research Moranhat, Assam	North	Assam	788	http://wikimapia.org
16	BL Institute of Indology, Delhi	North	Delhi	1363	www.blinstitute.org
17	Mazahar Memorial Museum, Bahariabad, Ghazipur (UP)	North	Uttar Pradesh	1256	
18	Oriental Research Institute, Sri Venkateswara University, Tirupati	South	Andhra Pradesh	33,543	www.svuniversity.in
19	Andhra Pradesh Government Oriental Manuscripts Library and Research Institute, Hyd.	South	Andhra Pradesh	24,000	www.manuscriptslibrary.ap.nic.in
20	French Institute of Indology, Pondicherry	South	Puducherry	37,494	www.ifpindia.org
21	Oriental Research Institute Mysore	South	Karnataka	78,141	www.uni-mysore.ac.in
22	Department of Manuscriptology, Kannada University, Hampi	South	Karnataka	3000	www.kannadauniversity.org
23	National Institute of Prakrit Studies and Research, Shravanabelagola	South	Karnataka	15,000	www.jainmanuscripts.nic.in
24	Keladi Museum and Historical Research Bureau, Shimoga	South	Karnataka	400	http://www.craftrevival.org
25	Mahabharata SamshodhanaPratishthanam, Bangalore	South	Karnataka	59,886	http://www.poornaprajna.com
26	Thanjavur Maharaja Serfoj'sSaraswati Mahal Library, Thanjavur	South	Tamilnadu	36,323	www.sarasvatimahallibrary.asp

(continued)

Appendix I. (continued)

Sl. No.	Name of the Resource Centre	Zone	State	No. of Manuscripts	URL
27	Central Library University of Madras, Chennai	South	Tamilnadu	5222	www.unom.ac.in
28	Sri Chandra SekharendraSaraswathiViswaMahavidyalaya, Kanchipuram	South	Tamilnadu	5000	www.kanchiuniv.ac.in
29	Oriental Research Institute and Manuscripts Library, University of Kerala	South	Kerala	75,680	www.keralauniversity.ac.in
30	Thunchan Memorial Trust, Tirur	South	Kerala	143,970	www.thunchanmemorial.org
31	DG Centre for Heritage Studies, Thripunithura	South	Kerala	498	http://www.kerala.gov.in
32	GOML & Research Centre University of Madras Library Campus, Chennai	South	Tamilnadu	1214	www.tnarch.gov.in
33	Khuda Bakhsh Oriental Public Library, Patna	East	Bihar	1214	www.kblibrary.bih.nic.in
34	Kameshwari Singh Darbhanga Sanskrit University, Darbhanga	East	Bihar	5562	www.ksdsu.edu.in
35	Nava NalandaMahavihara, Nalanda	East	Bihar	20,000	www.navanalandamahavihara.org
36	Sri DK Jain Oriental Research Institute, Arrah	East	Bihar	3179	
37	Calcutta University Manuscripts Library Kolkata	East	Kolkata	42,000	http://www.caluniv.ac.in
38	Odisha State Museum Bhubaneswar	East	Odisha	37,273	www.odishamuseum.nic.in
39	SARASVATI, Bhadrak	East	Odisha	98,424	http://pincode.net.in
40	Krishna KantaHandiqui Library Gauhati University of Gauhati	East	Assam	4500	www.gauhati.ac.in
41	Manipur State Archives Imphal, Manipur	East	Assam	36,602	http://archivesmanipur.nic.in/
42	BC Gupta Central Library Gurucharan College Silchar, Assam	East	Assam	500	http://www.gccollege.ac.in/
43	Tripura University, Tripura	East	Tripura	870	http://www.tripurauniv.in
44	Patna Museum, Patna	East	Bihar	–	
45	Culture and Archiology, Raipur	East	Chhattisgarh	–	
46	Rajasthan Oriental Research Institute, Jodhpur, Rajasthan	West	Rajasthan	176,954	http://www.rori.nic.in
47	LalbbhaiDalpatbhai Institute of Indology, Ahmedabad	West	Gujarat	64,740	http://beta.lindology.org
48	Bhandarkar Oriental Research Institute, Pune	West	Maharashtra	68,877	http://www.bori.ac.in/
49	KavikulaguruKalidasa Sanskrit University, Ramket	West	Maharashtra	6143	http://www.sanskrituni.net
50	Institute for Oriental Studies (Shivashakti) Thane	West	Maharashtra	1244	http://www.orientalthane.com
51	Sat ShrutPrabhavana Trust, Bhavnagar	West	Rajasthan	59,001	http://www.satshrut.org
52	AnandasharmSanstha,Pune	West	Maharashtra	1536	http://sanskritbhavan.blogspot.in
53	Shivaji University Kolhapur	West	Maharashtra	6517	http://www.unishivaji.ac.in/
54	Shri Dwarakadhish Sanskrit Academy and Indological Research Institute	West	Gujarat		
55	Scindia Oriental Research Institute Vikram University Ujjain	Central	Madhya Pradesh	18,000	http://www.indianetzone.com
56	Dr HS Gaur University, Sagar	Central	Madhya Pradesh	33,983	http://www.dhgsu.ac.in
57	KundaKundaJnanapitha, Indore	Central	Madhya Pradesh	26,827	www.kundakunda@sancharnet.in

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References

- Corea I (1993) *Encyclopedia of Information and Library Science*. New Delhi: Akashdeep.
- Cornish GA (1970) *The Encyclopedia Americana International Edition*. New York: Americana Corporation.
- Devi TS (2008) Impact of information technology on the societal archive: A case study of Manipuri manuscripts. *International Information and Library Review* 40(3): 179–184.

- Gaur RC and Chakraborty M (2009) Preservation and access to Indian manuscripts: A knowledge base of Indian cultural heritage resources for academic libraries. In: *ICAL 2009 – Vision and roles of the future academic libraries*, New Delhi, India, 5–8 October 2009, pp. 90–98. New Delhi: University of Delhi.
- Gorman M and Winkler PW (eds) (1988) *Anglo American Cataloguing Rules*. 2nd edn. Chicago, IL: ALA.
- Government of India. Department of Culture (2002) *National Mission for Manuscripts. Project Report*. New Delhi: Department of Culture, India.
- Government of India. Department of Culture (2004) *National Mission for Manuscripts*. Available at: http://www.india.gov.in/knowindia/national_mission.php (accessed 15 December 2014).
- Indira Gandhi National Centre for the Arts (IGNCA). Available at: www.ignca.nic.in (accessed 13 December 2015).
- Indira Gandhi National Centre for the Arts (2003) *National Mission for Manuscripts. Report, IV* (July–August 2002). Available at: <http://www.ignca.nic.in/nl002203.htm> (accessed 23 November 2014).
- Kumar M and Sharma N (2007) Digitization of manuscripts and rare literature: Initiatives of Archival Cell, Panjab University, Chandigarh (INDIA). In: *5th International CALIBER 2007*, Punjab University, Chandigarh, India, 8–10 February 2007, pp. 12–24.
- Kumar S and Shah L (2004) Digital preservation of manuscripts. In: *2nd Convention PLANNER – 2004*, Manipur University, Impha, India, 4–5 November 2004, pp. 27–36. Ahmedabad: INFLIBNET.
- Londhe NL, Sanjay KD and Suresh KP (2011) Development of a digital library of manuscripts: A case study at the University of Pune, India. *Program* 45(2): 135–148.
- Majumdar S (2005) Preservation and conservation of literary heritage: A case study of India. *International Information & Library Review* 37(3): 179–187.
- Maltesh M, Lakhar N and Gajakose S (2007) Digitization of culture. In: *5th Convention PLANNER – 2007*, Gauhati University, India, 7–8 December 2007, pp. 245–253. Ahmedabad: INFLIBNET.
- Mazumdar NR (2009) Digital preservation of rare manuscripts in Assam. In: *7th International CALIBER*, Pondichery University, Puducherry, India, 25–27 February 2009, pp. 14–19.
- Nair RR (2006) Digitization of indigenous materials: Problems and solutions in the context of Kerala University. In: Rajan GD (ed.) *Library and Information Studies in the Digital Age: Prof. K. A. Isaac Commemoration Volume*. New Delhi: Ess Publications. pp. 1–21.
- National Archives of India. Available at: www.nationalarchives.nic.in (accessed 12 January 2015).
- National Library of India, Kolkata. Available at: www.nationallibrary.gov.in (accessed 13 January 2015).
- National Mission for Manuscripts. Available at: <http://www.namami.nic.in> (accessed 5 November 2014).
- National Mission for Manuscripts (2005) *Guidelines for Digitization of Manuscripts*. Available at: <http://www.namami.nic.in> (accessed 5 November 2014).
- National Mission for Manuscripts (2014) *Report of the Eleventh Year 2013–14*. Available at: <http://www.namami.nic.in> (accessed 23 November 2014).
- Ramana YV (2005) Digital preservation of Indian manuscripts – An overview. In: *3rd International CALIBER 2005*, Cochin, India, 8–10 February 2007, pp. 370–376. Ahmedabad: INFLIBNET.
- Saikia RR and Kalita B (2011) Prospects of digitizing manuscript collection in KKH Library: A model. In: *8th International CALIBER – 2011*, Goa University, Goa, India, 2–4 March 2011, pp. 312–319. Ahmedabad: INFLIBNET.
- Singh A (2012) Digital preservation of cultural heritage resources and manuscripts: An Indian Government initiative. *IFLA Journal* 38(4): 289–296.
- Stewart C (1809) *A Descriptive Catalogue of the Oriental Library of the Late Tipu Sultan of Mysore*. Cambridge: Cambridge University Press.

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Preserving digital heritage: At the crossroads of Trust and Linked Open Data

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Abstract

Regardless of current or future technologies, accessing digitally preserved information resources will always pose challenges. There is a plethora of models, standards and best practices addressing the different facets for the preservation of digital objects. The management of digital objects requires well-defined policies and data management plans that include all processes within their specific lifecycle. To achieve high levels of data sharing and long-term re-use of data, APARSEN recommends developing an Interoperable Framework for Persistent Identifiers, paving the way for a 'Ring of Trusted Persistent Identifiers for Linked Open Data'. To enable semantic interoperability of such a Ring, this article proposes to map LOD2-BD metadata with the Framework's ontology. The Ring can be further enriched with LOD2 Technology Stack to tackle the problem of trustworthiness of linked data lifecycle while addressing the issue of Big Data. To be trusted, digital libraries need to be audited and certified in compliance with the European Framework for Audit and Certification.

Keywords

Digital libraries, digital preservation, European Framework for Audit and Certification, interoperability, linked data, LOD2-BD, LOD2 Stack, Trusted digital repositories

Curators at important institutions had been making heroic efforts against the loss of shared cultural heritage (Miller and Ogbuji, 2015: 23).

Digital preservation: Context

In a special issue of the journal *ISQ Information Standards Quarterly* (2010: 3) dedicated to digital preservation (DP), it was stressed that our rapidly changing digital world suffers from an over-abundance of unstructured digital information, rapid obsolescence of hardware and software, and increasingly restrictive intellectual property regimes. To ensure continued, sustainable and authentic long-term access to digital information, a vibrant international community of digital information specialists is continuously developing and implementing standards and best practices in the areas of digital curation and DP, taking into

account that technological means for storage of digital information will change over time. This means that choices made early in the life of a digital project will certainly have an impact on digital posterity (Holdsworth, 2007: 7).

Albeit issues regarding DP will continue to be pressing in the digital universe and despite DP policies that differ greatly across countries, the fundamental challenges regarding information resources' availability over time are universal (Henneken,

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2015; UNESCO, 2012). These challenges concern the whole curation lifecycle of digital resources and are largely addressed by the central methodological problems of research in science and technology at the intersection of digital libraries. The aim of a digital library that may host a number of digital repositories is to facilitate communication between libraries, museums and archives at a cross-cultural level, in order for these institutions to work together to a greater extent, making their digital collections and objects available on the Web for a large audience through one central (multifocal) access point (IFLA, 2014).

Pursuing preservation research to forward the National Preservation Research Agenda, the Library of Congress, in consultation with leading scientific laboratories, has developed a matrix of preservation science projects undertaken by libraries, archives and museums worldwide, illustrating the wide spectrum of preservation research from scientific and forensic studies to the development of preservation treatment (Library of Congress. National Preservation Research Agenda).

The qualitative shift from good research to good practice requires cutting-edge strategies, as in the implementation of methods underpinning the storage of digital memories comprising both short-term and long-term preservation of digital objects (DOs) (COAR, 2015; Cornell University). Preservation of DOs in the long term is not limited to storage and backup; rather it involves multifaceted strategies aimed at providing a Trusted environment (covering authenticity, integrity, long-term access, security issues) where DOs can evolve along with the changes in technology, hardware and software (InterPARES Trust; W3C, 2011). The long-term DP together with the principle of open access to research data (and their metadata) offer broad opportunities for the scientific community. In particular, more and more universities and research centres are starting to build research data repositories allowing permanent and open access to data sets in a trustworthy environment (Swan et al., 2015; Zenodo, 2014: 3). In this context it should be underlined that just a few recognize the importance of preserving the so-called negative results or the inconclusive results deriving from the processes of elaboration of raw data. Usually positive results are preserved and accessible over the long term.

The Digital Curation Centre (DCC) places DP at the centre of digital curation (maintaining, preserving and adding value to digital data throughout its lifecycle) activities. These latter are of vital importance to ensure and achieve qualitative access management and content re-usability by means of well-established

digital curation workflow models (e.g. Taverna) and tools (Weidner and Alemneh, 2013) supporting a complex set of actions necessary to support authenticity, reliability, usability and integrity – measured in terms of content, fixity, reference, provenance, and context – of DOs in a long-term perspective.

DO is the heart of what DP management is all about. PREMIS (PREservation Metadata Implementation Strategies) data dictionary defines DO as ‘a discrete unit of information in digital form. A DO can be a representation, file, bitstream, or filestream’ (Library of Congress, 2012: 13). The annual International Conference iPRES, dedicated to different aspects of DP, endorses DOs under the aegis of articles, datasets, images, stream of data (iPRES, 2013: 72). The California Digital Library Glossary identifies DO as an entity with one or more content files united (physically and/or logically, through the use of a digital wrapper) to their corresponding metadata, while the Glossary of Archival and Records Terminology refers to DO as an information resource ‘that has been digitally encoded and integrated with metadata to support discovery, use, and storage of those objects’ (Society of American Archivists, 2005). In regard to metadata, they are essential elements for managing, accessing, reusing, retrieving and preserving huge amounts of information resources (LIBER, 2014). Together with metadata, certain significant properties (InSPECT Project) of DOs need to be preserved in order that these latter are deemed authentic over time.

Digital preservation: Between quality, sustainability and planning

According to the widely-accepted ISO 9000 definition, quality is ‘the totality of features and characteristics of a product or service that bear on its ability to satisfy a given need’ (ISO 9000). An important prerequisite for every sustainable DP management system is to continuously assure compliance to specific quality requirements (technical and non-technical) adopted by its outsourcing and/or hosting organization (American Society for Quality (ASQ)). The ISO 25010 (2011) system and software quality model – often adopted by organizations to set-up DP plans based on classificatory decision criteria for technical requirements (Hamm and Becker, 2011) – defines a hierarchy of quality attributes by combining characteristics related to the outcome of interaction of the software product (quality in use) and those related to static properties of software and dynamic properties of the computer system (product quality).

Quality and sustainability of DP management systems are terms very much ‘in vogue’ (Doorn, 2013;

Hey, 2012). The recent document *COAR Roadmap for Future Directions for Repository Interoperability* includes the concept ‘Sustainability’ among six topics regarding interoperability and groups it with goals such as:

- Improving Platform Stability;
- Supporting long-term preservation and archiving;
- Exposing Persistent Identifiers;
- Integrating different Persistent Identifiers (COAR, 2015: 12).

To provide sustainability of activities and workflows in DP services (APARSEN, 2013a), a structured, systematic process – based on well-defined strategies (e.g. Digital Preservation Strategy of the British Library), interoperable policies (Innocenti et al., 2011) (e.g. Digital Preservation Policy of the National Library of Australia; PORTICO Trust Archive Preservation Policies) and comprehensive data and process management plans (DMPs) – is essential (Budroni et al., 2013; ICPSR; RDA).

A core set of controlled vocabulary elements can be ‘instantiated to connect preservation planning, preservation watch, and experimentation with preservation policies’ (Kulovits et al., 2013; PLATO).

DMP should be an integral part of every project implicating data management, and it should formalize in detail all technical and non-technical elements – including processes (e.g. workflows performing complex operations involving identification, migration, conversion tools, as well as the comprehension of visualization issues) and context – accompanying a DO’s lifecycle in conjunction with a repository environment.

The DMP section devoted to ‘Preservation’ should comprise and relate all necessary features and requirements clarifying issues on:

- technical registries, i.e. information about file formats: TIFF, PDF/A, ALTO, TEI, BWF, AIFF, MXF, AVI, etc. (California Digital Library, 2011; PREFORMA) and their conversion (Holdsworth, 2007); software products to access the information; migration paths and platforms; persistent identifiers/PIDs unambiguously locating and accessing DOs;
- Digital Rights and Access Management (DRM) within the context of long-term DP, as well as the related risks and challenges arising in connection with the long-term DP, ongoing accessibility of DRM-protected objects, and the safeguarding of associated rights (APARSEN, 2014b);

- standards concerning preservation and workflows for collecting actionable representation and administrative (that can overlap with technical and preservation metadata) metadata (Digital Preservation Coalition, 2013);
- costs in time and effort.

The overall structure of DMP, considering also processes for data curation – as stressed by Rauber (2014) – should:

- demonstrate that resources and systems will enable the data to be curated effectively beyond the lifetime (DCC, 2014);
- describe all contingent processes, their implementation and data used and produced by processes;
- provide preservation history (long-term storage and funding);
- highlight conditions for sharing, reuse, verification, legal aspects;
- demonstrate monitoring and external dependencies;
- be machine-readable and machine-actionable to automate (most of) the activity in creating and maintaining that DMP.

The main building blocks for process management plans (PMPs), that comprise:

- metadata frameworks;
- preservation plans;
- process context models;
- preservation actions;
- approaches for validation documentation;
- policies;

should be carefully analyzed and elements establishing context of interoperable process activities should be mined and described in a context model, combining features with ground truth into specific file format. PMPs extending DMPs should automatically enable the following processes: capture processes, workflows and their dependencies; verify correctness of re-execution and re-use of data and workflows; identify subsets of data in large and dynamic databases; assign PIDs to time-stamped query; capture all elements of a research process; cite data, etc. Needless to say that the development of DMP requires a certain degree of cooperation between a number of agents responsible for a wide range of Digital (Data) Curation phases (DCC, 2014; Ganguly, 2015; IFLA, 2012; Tammaro and Casarosa, 2014; UC Curation Center).

Framing digital objects' preservation: Models and initiatives

Preservation metadata have been identified as essential for the long-term management of DOs. The core of DP metadata is PREMIS specifying the semantic units/classes (Intellectual Entities, Objects, Rights, Events, Agents) designed to support the long-term accessibility of a DO by providing information about its content, technical attributes, dependencies, management, designated communities and change history. PREMIS interoperable units convey detailed and complex information about digital content through administrative metadata, technical metadata and specification of structural relationships relevant for preservation functions (*ISQ Information Standards Quarterly*, 2010).

For institutions getting started with DP, the metadata standards able to support quality and sustainability of DO in a long-term period can be overwhelming. Making smart choices about what constitutes 'good enough' can enable repository managers to move forward more quickly. Michael Day published in 1997 a short paper in *Ariadne* on the implications of metadata for DP from the point of view of responsibilities. The author addressed five important issues which to this day still represent challenges, which are the following:

- Who will define what preservation metadata are needed?
- Who will decide what needs to be preserved?
- Who will curate the preserved information?
- Who will create the metadata?
- Who will pay for it? (White, 2015)

It is obvious that DP implies machines' and humans' dependability and there should be a common framework regulating responsibilities and interactions between humans and systems and accepting the responsibility to preserve information and make it available for a designated community. Such a common framework is presented by the widely-endorsed Open Archival Information System (OAIS) model (Lavoie, 2014), published as Standard ISO 14721 (2012), which provides a first-rate overview of the role of preservation metadata in the management over time of digital resources and contains a set of Preservation Policies.

When it comes to the long-term perspective of the Digital Library project (IFLA, 2014), a strategy for long-term digital preservation (LTDP) is required and OAIS provides a well-suited reference model for this context. OAIS vision has been specifically tailored for the purposes of lifecycle management in Rome at the

Sapienza Digital Library, particularly for building a consistent set of data, covering all information needs, required by the different OAIS functional scenarios: Ingestion (Submission IP), Archiving (Archival IP) and Access (Dissemination IP). The Digital Library and DP services should be based on data conveyed by the aforementioned IP and enriched by a number of components, supporting the management of the information infrastructure (Catarci et al., 2014).

Over the last decade, great practical progress has been achieved in support of DOs' expressivity and long-term sustainability. In particular, a series of methodologies, models and implementation guidelines have been developed by a number of projects (e.g. APARSEN, PREFORMA, SCAPE, SCIDIPES, TIMBUS, WF4Ever, KEEP, DP4lib, PrestoPRIME, PersID, CHRONOPOLIS, PARSEinsight, Preserv, SHAMAN, SPAR, PLANETS, CASPAR), every one of which has come up with a number of personalized (strongly community-driven and 'by design') frameworks, tools and systems to solve distinct problems in the DP domain, accelerating long-wave preservation trends with cross-disciplinary strategies. Moreover, 'an essential step in the data preservation process is to convince people to invest time and effort in depositing their data in repositories specifically designated for data preservation' (Henneken, 2015: 41, 42), like PHAIDRA (Phaidra, The Ten Commandments for Policy), DANS, Dataverse Network, Zenodo, etc.

Several important preservation issues addressing maintenance and preservation of cultural heritage (CH) resources in the long term as well as their persistent accessibility to the global community have been focused on EUROPEANA Digital Library. This last is a core of the European Commission Recommendation on the digitization and online accessibility of cultural material and digital preservation (European Commission, 2011), that has challenged Member States to develop solid plans and build partnerships to place all public domain masterpieces in EUROPEANA by 2015 and, by 2025, all of Europe's cultural heritage. The Recommendation also invites all interested shareholders to adapt national legislation and strategies to ensure the long-term DP of more in-copyright and out-of-commerce, i.e. Open Data, CH material online conveyed by non-property (open) formats as property ones make the preservation risky.

To support collaborative creative endeavours in sharing, re-use and enrichment of CH data by adding new value, EUROPEANA Cloud (EUROPEANA Professional) will change the way that data (content and metadata) are sent to and stored in EUROPEANA, and will give researchers new tools to

support their engagement in a Trusted, efficient cloud-based infrastructure forging connections with new communities exploiting potential synergies.

The ongoing European project PERICLES (Promoting and Enhancing Reuse of Information throughout the Content Lifecycle taking account of Evolving Semantics) – besides addressing a number of challenges ensuring that DOs remain accessible in a digital environment encompassing continuous technological change – stresses that changes in semantics (i.e. semantic obsolescence), academic or professional practice, or society itself can also influence the attitudes and interests of the various stakeholders that interact with digital content (PERICLES). Among a range of conceptual and formal models, tools, policies, architectural approaches developed to support a range of preservation requirements to be used independently in different environments, it is worth citing the PET modular toolkit for extracting Significant Environment Information (SEI) and Linked Resource Model (PERICLES) based on linked data (LD) principles for representing dynamic preservation ecosystems. It is already well known that:

Linked Data provides a global environment for describing the objects and their significant properties. This environment reduces duplication of effort when describing resources and their attributes, and fosters the creation of a global information graph encompassing all the information needed to perform complex queries and actions. (W3C, 2011)

Another project worth citing in the context of LD and preservation of CH is the LINKED HERITAGE project. The LINKED HERITAGE project published a few years ago a document entitled *State of the Art Report on Persistent Identifier Standards and Management Tools*, stressing the importance of creating digital identifiers (Uniform Resource Identifier/URI) which are reasonably persistent (PI) as, for example, DOI names (ADNS, 2013; DOI, 2013; LINKED HERITAGE, 2013). The document mentioned addresses the following issues: CH Institution Requirements for PIs; PI service requirements for PIs; PI Policy; LD and PIs.

To tackle the key issues affecting the preservation and long-term accessibility of digital CH, in 2012 UNESCO organized an international conference entitled ‘The Memory of the World in the Digital age: Digitization and Preservation’ and published the *Vancouver Declaration*, including a number of the main recommendations on Trusted DP frameworks and practices for collaborative management and preservation (DCH-RP Project; UNESCO/UBC, 2013). To

support DP activities on a regular basis among different stakeholders, a two-year Coordination Action ‘Digital Cultural Heritage Roadmap for Preservation’ (DCH-RP) was launched by the European Commission (2012). This initiative presented an action framework appropriate for advancing outstanding case studies, practices and effort in facilitating, promoting, advocating, raising awareness and disseminating harmonized data storage and preservation policies developed by different communities (CH organizations and e-Infrastructure providers) aiming to improve access to information and CH resources. The main outcome of this action is a DCH-RP Roadmap supporting implementation of a DP federated and interoperable collaborative e-infrastructures, supported by common standards, practical tools, approaches and business models for decision makers. The DCH-RP Roadmap makes it possible for each CH entity to define its own practical action plan with a realistic timeframe for the implementation of its stages. The DCH-RP Roadmap also provides practical steps to design a Trust model appropriate for the use in collaborative e-Infrastructures and including recommendations for user authentication and access control system(s). Above all, collaboration with a diverse set of stakeholders means that libraries can stake their place in the common vision for DP, thus ensuring that the issues surrounding the preservation of digital CH are represented in this vision (Reilly, 2013).

A common thread among all projects and initiatives focusing their efforts on DP activities is that they highlight the need to contribute qualitatively to the lifecycle of interoperable DOs in a Trusted (complying with specific requirements of quality and sustainability) digital environment. So what are the facets of such an environment and is there any common practical framework to assess its quality and sustainability?

The next sections will be devoted to presenting some issues of interoperability and trust that can be replicated in any DO management environment. Initiatives to be presented below that address these issues are: the already cited APARSEN, LODE-BD, LOD2 and ISO 16363 (2012) tackling a range of topics focused on persistent interoperability and trust of DO management systems.

Interoperability framework for persistent identifiers systems enhanced by LODE-BD e LOD2

One of the main goals of the European APARSEN project was to combine and integrate European DP efforts into a shared enterprise and thus to build a long-lived Virtual Centre of Excellence (VCoE) to

share a common vision (APARSEN Roadmap underpinned by the revised OAIS Reference Model) of expertise, tools and resources for DP clustered in two hierarchical groups (Research Silos and Integrated Topics) with common agreement on terminology, evidence standards, DP services, access and re-use of data holdings over the whole life-cycle. The common topics of APARSEN 'Access', 'Usability', 'Sustainability' and 'Trust' are impregnated by issues such as interoperability in connection to PIs.

The concept of 'interoperability' promoted by APARSEN (2013b) is conceived in terms of a common way to access data in the same format even if these data belong to heterogeneous PI domains. Considering that different identification schemes will never speak with each other (e.g. DOI does not speak with NBN), APARSEN provides Persistent Identifiers (PIs) Interoperability Framework (IF), commonly known as 'IF for PI systems' (APARSEN, 2012a) underpinning interoperability, persistent access, reuse and exchange of information through the use of existing PIs and associated objects across different systems, locations and services. The basic idea of IF for PI systems is that a common conceptual representation is the main condition to design added-value interoperability services, which can exploit the value of a scheme of representation agreed and shared across Trusted systems in order to facilitate exchange, re-use and integration of DOs identified in these systems by different PIs.

Different repositories, for example PHAIDRA (Permanent Hosting, Archiving and Indexing of Digital Resources and Assets) and the repositories working within the frame of the PHAIDRA.org network, provide their own identifier system, which is applied to the objects generated through the repository. Moreover, PHAIDRA objects in the future will be assigned more than one PI, namely Handle and URN, according to the needs of the owners of the objects.

With the increasing exchange of metadata, different identifier systems will clash in a repository environment. Any type of additional PI (e.g. PMID/PMCID, ISSN, DO) is useful to fetch more, contextual Information (COAR, 2015: 18).

In compliance with the Linked Content Coalition (2012) Framework, any unique PI should be resolvable to a single object such as web page or file, or to both object and metadata or to multiple objects, such as different formats of the same objects, or different content types, through the same PI (multiple resolution). The resolution is the key mechanism enabling a system to locate and access the identified object or information related to it on the Web.

No digital system can be functional and interoperable without metadata and the explicit linkages between metadata and resources identified by PIs (e.g. relation existing between a resource and the collection of which it is part of). Common conceptual representation of metadata in different services represents an added value that can speed up the implementation of their interoperability. In this respect, the IF is mapped to the incoming Dublin Core and MARC information on the APARSEN entities through flexible FRBRoo ontology (Bekiari et al., 2015) bridging entities representing library and museum CH resources.

The metadata normalization could be accomplished on top of nine metadata groups of common properties recommended by LOD-BD (Linked Open Data enabled Bibliographical Data) (Subirats and Zeng, 2013), which are: Title Information; Responsible Body; Physical Characteristics; Location; Subject; Description of Content; Intellectual Property; Usage; Relation. These nine clusters are consistent in both type of entities and relationships between entities in the treatment of Work, Expression, and Manifestation concepts used in FRBR (Functional Requirements for Bibliographic Records) (IFLA, 1998). Being mapped to DC (simple and qualified) and to other metadata and schemes, also designed to support bibliographical data on the Web, LOD-BD metadata can be seen as one-size-fits-all approach for encoding meaningful LOD-ready bibliographical data concentrated on the data, not on the scheme.

As a reference tool, LOD-BD provides assistance on how to make decisions on metadata modelling (in both depth and detail), encoding and implementation (with better response to specific needs via Design-time/Run-time strategies (Subirats and Zeng, 2013) by providing all necessary paths on how to create meaningful and comprehensive (both to humans and web engines) bibliographic data and to share (Subirats et al., 2011) them among different systems and with LOD universe (an unbound, global data space containing more than 31 billion triples) (ALOE; GETTY).

Content/data providers aiming to communicate and to discover knowledge via a common 'IF for PI systems' can directly create RDF triples using LOD-BD metadata properties encoded with non-literal (URI) data values of LOD-ready schemes. In this way, content providers will be aligned on the backbone of a common conceptual representation of data. In the ideal draft scenario, these data should be aggregated by a central 'IF for PI systems' (service provider) – exploiting powerful crosswalks and ontology including LOD-BD metadata – with no delays,

failures, errors or omissions or loss of transmitted information. ‘Since publishing as LOD in any case means interlinking the data with external sources by means of typed relations, it would foster the topic of data interoperability’ (COAR, 2015: 37).

After the metadata normalization in APARSEN IF comes the stage of the co-reference generation among resources through a `<owl:sameAS>` relation indicating that two URI refer to the same entity (i.e. digital objects/authors/institutions have the same ‘identity’). The programming of a technical infrastructure based on APARSEN IF should foresee all standardized relationships between the identified entities, their PIs, the corresponding resolution services and related information (metadata). Finally, a common interoperability layer – where meaningful information from independent systems is integrated, re-used and exploited to enable added-value interoperability services (APARSEN, 2014) – can be created.

APARSEN IF for PI systems stresses the importance of registering alternative identifiers for the same entity, because it guarantees multiple ways to access the resource and related information, making the resolution process really persistent.

The first prototype of the APARSEN IF for PI systems demonstrator was presented in 2012 at the workshop ‘Interoperability of Persistent Identifiers Systems – Learning how to bring them together’ (APARSEN, 2012b). This demonstrator aggregated some metadata provided by several APARSEN partners on a single machine implementing the IF (FRBRoo) ontology in a RDF triple store mechanism and exposing these metadata through a SPARQL endpoint. The prototype exposes co-references among related entities in the knowledge base using information provided by content providers. ‘If the IF is widely implemented it can become a reference model for any future development for PI systems and it could create a “Ring of Trusted PI for Linked Open Data (LOD)”’ (APARSEN, 2013b: 4).

Extending PRESERVING LINKED DATA project’s challenges, the first DIAHRON Workshop (hosted by ESWC2015) entitled ‘Managing the Evolution and Preservation of the Data Web’ (DIAHRON Workshop, 2015) stressed that it is of particular relevance for different stakeholders to raise awareness of how openly available LD sets could be used to achieve their full potential. A traditional view of digitally preserving LD sets by pickling them and locking them away for future use, like groceries, would conflict with their evolution. To provide some solutions to this problem, the European LOD2 Project proposed the LOD2 approach (i.e. LOD2 Stack) to plan and manage a full life-cycle of LD.

In particular, the LOD2 Project was launched to deal with the following issues:

- How to improve coherence and quality of data published on the Web?
- How to close the performance gap between relational and RDF data management?
- How to establish Trust on the LD Web and generally lower the entrance barrier for data publishers and users?

These questions have been answered by providing:

1. tools and methodologies for exposing and managing very large amounts of structured information (Big Data) on the Data Web (H2020 project; OAI9 Workshop, 2015; OR2015, 2015);
2. a testbed and bootstrap network of high-quality multi-domain, multi-lingual ontologies from sources such as Wikipedia and OpenStreetMap;
3. algorithms for automatically interlinking and fusing data from the Web;
4. standards and methods for consistently tracking trust and trustworthiness of information as well as for assessing its quality (Gladney, 2009; Hartig, 2009; Semantic Web Company, 2013);
5. adaptive tools for searching, browsing, and authoring of LD.

The LOD2 Stack provides a series of mechanisms to manage a full life-cycle of LD, by tackling:

- synchronisation problem (i.e. how to monitor changes);
- curation problem (i.e. to repair data imperfections);
- appraisal problem (i.e. to assess the quality of a dataset);
- citation problem (i.e. how to cite a particular version of a linked dataset);
- archiving problem (i.e. to retrieve the most recent or a particular version of a dataset);
- sustainability problem (i.e. to spread preservation ensuring long-term access).

The LOD2 Stack is a valuable tool to support creators and publishers of LD and is a likely candidate to be integrated in the ‘Ring of Trusted PI for LOD’. In particular, engaging LOD2-BD and LOD2 Stack in the IF for PI systems will empower its interoperability, pave all necessary conditions for ‘Creating Knowledge out of Interlinked Data’ (Auer et al., 2014) and enhance ‘Proof and Trust’ (Jaques et al., 2012).

The next section will introduce the reader to the concept of Trust, a concept on which APARSEN and Trusted Digital Repository framework have focused their main endeavours.

Vision of trust

So how can CH organizations collaborate to address unique practices and challenges worldwide related to DP and to management of Trusted systems, aiming at ensuring persistent access to digital resources worldwide?

One of the ways is to be engaged with the DP community as a whole. The previously mentioned APARSEN network, by extending its Virtual Centres of Excellence (Centro di Eccellenza Italiano sulla Conservazione Digitale), invites different stakeholders to take part in its network contributing to and sharing a common DP vision. Collaboration with a diverse set of practitioners (public and private), exchanging their experience and expertise, means that the CH sector can gain its place in the common cross-referenced vision for DP, ensuring that the issues surrounding the preservation and management of digital CH are represented in this common vision too.

In recent years, there have been multiple efforts to assess repositories with the objective of making their practices and procedures transparent, while assuring that their valuable digital assets are protected.

A few years ago, APARSEN presented a unified European vision of Trust in DP (APARSEN, 2012c), in particular when it comes to unfamiliar digitally encoded information, especially when it has passed through several hands over a long period of time. The report collected, evaluated and provided key answers to the following issues:

- Has the digitally encoded information been preserved properly?
- Is it of high quality?
- Has it been changed in some way?
- Does the pointer or link takes user to the right object?

The unified vision of trust refers to three levels for evaluation of Trusted Digital Repositories (TDR). These levels constitute the TDR framework and are recognized as the 'European Framework for Audit and Certification on Digital Repositories' underpinned by a Memorandum of Understanding (MoU) (TrustedDigitalRepositories.eu, 2010). The relevance of TDR framework is also stressed by DCC in the context of lifecycle planning for successful DC.

The integrated multilevel framework for evaluation of a TDR assembles:

1. Data Seal of Approval (DSA) assessment initiative;
2. Standard DIN 31644 (2012) – Information and Documentation. Criteria for Trusted Digital Repositories;
3. Standard for TDR - ISO16363 (2012) – Space Data and Information Transfer Systems – Audit and Certification of Trustworthy Digital Repositories.

By implementing this framework, the digital world may become more reliable. Moreover, the 'audit and certification of digital repositories are fundamental in guaranteeing the trustworthiness of research infrastructures as a whole' (Dillo, 2012: 1).

The first (Basic Certification) level – presenting an entry point for the self-accessing of repository quality and sustainability – requires a few days' effort from the repositories. The last two (Extended and Formal Certification) levels present auditing standards for TDR and require several person months to collect much more detailed information than the DSA, to take part in the audits for assessing the trust of digital repositories, considering also that it is 'not a one-time accomplishment that you achieve and then forget' (Dillo, 2012: 4).

Basically, the definition of a TDR starts with a mission to provide reliable, long-term access to managed digital resources to designated community/ies via an articulated framework of attributes (administrative responsibility, organizational viability, financial sustainability, and procedural accountability) and responsibilities for Trusted, reliable, sustainable digital infrastructures capable of handling the plethora of materials held by large and small CH and research institutions. The NESTOR working group defines a Trusted, long-term digital repository as a complex and interrelated system. In determining Trustworthiness, one should look at the quality of entire digital infrastructure, 'in which the digital information is managed, including the organization running the repository' (TRAC, 2007: 7, 9, 15).

The DSA sets forth 16 guidelines related to Trustworthy data management and stewardship (Data Seal of Approval, 2010). Some of the digital repositories awarded with DSA include: ICPSR, the Archaeology Data Service (United Kingdom); the DANS Electronic Archiving System (Netherlands); the Platform for Archiving CINES (France); the Language Archive of the Max Planck Institute for Psycholinguistics (Netherlands); and the UK Data Archive (ICPSR. Trusted Digital Repositories).

The standard DIN 31644 consists of 34 requirements structured in three parts: (1) organization; (2)

management of intellectual entities and their representations; (3) infrastructure and security. It includes Appendices with examples of digital repositories and best practices for each requirement.

The ISO 16363 – based upon the Trusted Digital Repositories and Audit Checklist (TRAC) tracing the story (‘let to’, ‘developed into’, ‘adopted as’, ‘informed’, ‘referenced by’) (Wikipedia) of all Digital Repository Standards – can be used as a basis for formal certification and assessment of digital repositories. TRAC describes the metrics of an OAIS-compliant digital repository developed from work done by the OCLC/RLG Programs and National Archives and Records Administration (NARA) task force initiative (Giarretta, 2011). The Center for Research Libraries Certification Advisory Panel (Center for Research Libraries) ensures that the certification process addresses the interests of different stakeholders including managers in collection development, preservation and library information technology.

The following different high-quality aspects are provided by both (1) TDR framework (organizational infrastructure; DO management and infrastructure; security risk management, etc.); and (2) Virtual Centres of Excellences constituted by APARSEN:

- repository policies compliant with TDR criteria can be defined (e.g. Comparison of TRAC Checklist and PLEDGE Policy List);
- preservation prototypes, as well as a portfolio of models, services and tools for innovative support of lifecycle management, monitoring risks and opportunities connected with DP components and quality measures can be developed;
- preservation ecosystems (shifting from collaborative approach towards distributed DP to Open Scalable Preservation Ecosystems) can be achieved (Kulovits et al., 2013; Skinner and Halbert, 2009); and
- a broader take-up of the DP projects’ results can be encouraged providing guidance that others can use in their own preservation efforts determining their own institutional DP needs, and including interactive ‘on-the-spot’ research on current DP trends.

Final thoughts and outlook

The push for the long-term DP of valuable information resources is both a challenge (ensuring that it is carried out in the most cost-effective and efficient methodological and implementation manner) and an opportunity for different stakeholders, included CH

organizations. The accurate selection and application of models and technologies promoted by a wide range of initiatives and projects, as well as replication of core elements of best practices – underpinning a plethora of facets of DP – will positively support persistent access to content and its interoperability in the long-term perspective, paving a stable way for re-use of data for research and innovation.

The APARSEN Network of Excellence in DP has launched the long-life collaborative Virtual Centres of Excellence, where different stakeholders can interact, sharing their models and practices and developing a common vision for DP.

By means of the APARSEN Interoperability Framework for Persistent Identifier systems empowered by LOD2-BD and LOD2 Stack, semantically enhanced content can be pushed in an interoperable Trustworthy manner out of its DC ecosystem to LOD universe, facilitating communities’ participation through data and knowledge re-use, re-distribution and sharing on the frontline of Linked Data. Trust and Trustworthiness of DP notably affect the quality and sustainability of DC, focusing its main efforts on the creation of long-life value-added services, where users can undertake innovative exploration and analysis of digital contents over a long span of time (APARSEN, 2014a).

Digital repositories compliant with organizations and policies and procedures, focusing well on preservation goals and assessed according to the European Framework for Audit and Certification on Digital Repositories are Trusted and Trustworthy and thus sustaining different opportunities for long-term data sharing.

To empower collaborative endeavours of Trusted DP communities, a set of interrelated technical and non-technical requirements, objectives and components for preservation quality should be programmed in human-machine friendly scalable PMPs connecting dynamically (on request and in respect with updates) cross-referenced elements and retrieving answers on queries, helping to monitor and to assess different preservation contexts with the goal of developing shared solutions for the optimization of DP services.

To enhance community-driven DP activities supported by Virtual Centres of Excellence, DP services should collaboratively focus their efforts on extending already existing ‘friendly human-machine’ controlled vocabulary elements for preservation quality, enabling interoperability among the building blocks of the preservation ecosystem (Kulovits et al., 2013). The semantics of such vocabularies should be optimized for RDF-aware environments, aligned and automatically updatable on the frontline of

Linked Open Data (Haag, 2011) and Big Data, thus notably contributing to enable interoperability features defined in the recent COAR (2015) *Roadmap for Future Directions for Repository Interoperability*. In an ideal scenario, such a common controlled vocabulary supporting DP should connect DP systems around the globe, merging the concepts of policy-aware operations, planning, technical and monitoring components of (complex) digital objects. The ultimate goal of such endeavour is to collaboratively ensure that all necessary exchangeable information is leveraged to develop a global scalable Trusted preservation ecosystem.

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References

- ALOE: Assisted Linked Data Consumption Engine, AKSW Research Group. Available at: <http://aksw.org/Projects/ALOE.html> (accessed 29 June 2015).
- ANDS (Australian National Data Service) (2013) *The Digital Object Identifier System & DOI Names*. Available at: <http://www.ands.org.au/guides/doi.html> (accessed 29 June 2015).
- American Society for Quality (ASQ). Available at: <http://asq.org/index.aspx> (accessed 29 June 2015).
- APARSEN. *About APARSEN*. Available at: <http://www.alliancepermanentaccess.org/index.php/aparsen/> (accessed 29 June 2015).
- APARSEN. *Virtual Centre of Excellence (VCoE)*. Available at: <http://www.alliancepermanentaccess.org/index.php/community/virtual-centre-of-excellence/> (accessed 29 June 2015).
- APARSEN. *The APARSEN Roadmap to a Common Vision*. Available at: <http://www.alliancepermanentaccess.org/index.php/aparsen/> (accessed 29 June 2015);
- APARSEN (2012a) *Persistent Identifiers Interoperability Framework. Report*. Rutherford Appleton Laboratory Chilton. Available at: http://www.alliancepermanentaccess.org/wp-content/uploads/downloads/2014/06/APARSEN-REP-D22_1-01-1_9_incURN.pdf; <http://www.alliancepermanentaccess.org/wp-content/plugins/download-monitor/download.php?id=Interoperability+Framework+for+PI+systems> (accessed 29 June 2015).
- APARSEN (2012b) *Workshop on PI system interoperability*, Auditorium Ente Cassa di Risparmio di Firenze, Italy, 13 December 2012. Available at: <http://www.alliancepermanentaccess.org/wp-content/uploads/2013/09/Interoperability-Framework-for-PI-systems-APARSEN.pdf> (accessed 29 June 2015).
- APARSEN (2012c) *Trust. Report*. Available at: <http://libereurope.eu/blog/2012/09/17/trust-in-digital-preservation/> (accessed 29 June 2015).
- APARSEN (2013a) *D21.1 Overview of Preservation Services. Report*, Rutherford Appleton Laboratory Chilton. Available at: http://www.alliancepermanentaccess.org/wp-content/uploads/downloads/2013/03/APARSEN-REP-D21_1-01-1_0.pdf (accessed 29 June 2015).
- APARSEN (2013b) *WP22 Citability and Identification, Interoperability Framework for PI systems. Report*. Available at: <http://www.alliancepermanentaccess.org/index.php/aparsen/aparsen-research/wp22-identifiers-and-citability/> (accessed 29 June 2015).
- APARSEN (2014a) *D22.4 The Interoperability Framework Implementation with Added Value Services. Report*. Rutherford Appleton Laboratory Chilton. Available at: http://www.alliancepermanentaccess.org/wp-content/uploads/downloads/2015/02/APARSEN-REP-D22_4-01-1_0.pdf (accessed 29 June 2015).
- APARSEN (2014b) *D31.1 Report DRM Preservation. ICT 6-4.1 – Digital Libraries and Digital Preservation. Report*. Available at: http://www.alliancepermanentaccess.org/wp-content/uploads/downloads/2014/06/APARSEN-REP-D31_1-01-1_4_incURN.pdf (accessed 29 June 2015).
- Auer S, Bryl V and Tramp S (2014) *Linked Open Data: Creating Knowledge out of Interlinked Data. Results of the LOD2 Project*. Lecture Notes in Computer Science 8661. Berlin: Springer.
- Bekiari C, Doerr M, Boeuf PL, et al. (2015) *FRBR Object-Oriented Definition and Mapping from FRBRER, FRAD and FRSAD. Report. Version 2.2*. Available at: http://www.ifla.org/files/assets/cataloguing/frbr/frbroo_v2.2.pdf (accessed 3 August 2015).
- Budroni P, Miksa T and Rauber A (2013) *Data Management Plans: How to Treat Digital Sources. The Imminent Future for Repositories and their Management*. LAB PHAIDRA (slides). Available at: https://www.coar-repositories.org/files/7_DMP_Vienna.pdf (accessed 21 April 2015).
- Bulletin of the Association for Information Science and Technology* (2015) Linked Data and the Charm of Weak Semantics. Special Issue, 41(4).
- California Digital Library (2011) *Digital File Format Recommendations: Master Production Files. Report*. Regents of the University of California. Available at: http://www.cdlib.org/gateways/docs/cdl_dffr.pdf (accessed 29 June 2015).
- California Digital Library. *Glossary*. Available at: <http://www.cdlib.org/gateways/technology/glossary.html#d> (accessed 29 June 2015).
- Catarci T, Di Iorio A and Schaerf M (2014) The Sapienza Digital Library from the holistic vision to the actual implementation. *Procedia Computer Science* 38(4) 4–11. Center for Research Libraries. *Certification & Assessment of Digital Repositories*. Available at: <http://www.crl.org/>

- edu/archiving-preservation/digital-archives/certification-assessment (accessed 29 June 2015).
- Centro di Eccellenza Italiano sulla Conservazione Digitale. Available at: <http://www.conservazionedigitale.org/> (accessed 29 June 2015).
- COAR (2015) *COAR Roadmap. Future Directions for Repository Interoperability. Comparison of TRAC Checklist and PLEDGE Policy List*. Available at: <http://pledge.mit.edu/images/8/81/TDRPPLTRACcompv2.pdf> (accessed 29 June 2015).
- Cornell University. *Digital Preservation Management: Implementing Short-term Strategies for Long-term Problems. Tutorial*. Available at: http://www.dpworkshop.org/dpm-eng/eng_index.html (accessed 29 June 2015).
- Data Seal of Approval (2010) *Guidelines, Version 2*. Available at: https://assessment.datasealofapproval.org/guidelines_1/html/ (accessed 29 June 2015).
- Dataverse Network. Available at: <http://thedata.org> (accessed 29 June 2015).
- DCC. *DCC Curation Lifecycle Model*. Available at: <http://www.dcc.ac.uk/resources/curation-lifecycle-model> (accessed 29 June 2015).
- DCC. *What is Digital Curation?* Available at: <http://www.dcc.ac.uk/digital-curation/what-digital-curation> (accessed 21 April 2015).
- DCC. *Lifecycle Planning for Successful Digital Curation*. Available at: <http://www.dcc.ac.uk/resources/curation-reference-manual/chapters-production/lifecycle-planning> (accessed 29 June 2015).
- DCC (2014) *Checklist for a Data Management Plan. Version 4.0*. Available at: <http://www.dcc.ac.uk/resources/data-management-plans/checklist> (accessed 3 August 2015).
- European Commission (2012) *DCH-RP Project. DCH-RP Digital Cultural Heritage Roadmap for Preservation*. Available at: <http://www.dch-rp.eu/> (accessed 29 June 2015).
- DIAHRON Workshop (2015) *Managing the Evolution and Preservation of the Data Web*. Hosted by ESWC2015. Available at: <http://www.diachron-fp7.eu/workshops.html> (accessed 29 June 2015).
- Digital Preservation Coalition (2013) *Preservation Metadata. Technology Watch Report*. Available at: <http://www.dpconline.org/newsroom/not-so-new/1027-new-preservation-metadata-second-edition-technology-watch-report-released-to-dpc-members> (accessed 3 August 2015).
- Dillo I (2012) Certification as a means of providing Trust. In: *Fondazione Rinascimento Digitale*, Florence. Available at: http://93.63.166.138:8080/dspace/bitstream/2012/114/3/Dillo-Ingrid-CH2012-Certification%20as%20a%20means%20of%20providing%20trust_CC.pdf (accessed 3 August 2015).
- DIN 31644 (2012) *Information and Documentation. Criteria for Trusted Digital Repositories*. Available at: <http://www.beuth.de/de/norm/din-31644/147058907> (accessed 3 August 2015).
- DOI (2013) *International DOI Foundation*. Available at: http://www.doi.org/doi_handbook/7_IDF.html (accessed 29 June 2015).
- Doorn P (2013) Towards sustainable data sharing. In: *Open Access Week*, 26 October 2013, Groningen, The Netherlands. Available at: <http://www.rug.nl/bibliotheek/services/openaccess/peter-doorn-2012?lang=en> (accessed 29 June 2015).
- European Commission (2011) Recommendation on the digitisation and online accessibility of cultural material and digital preservation. *Official Journal of the European Union*, 27 October. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:283:0039:0045:EN:PDF> (accessed 29 June 2015).
- EUROPEANA Professional. *EUROPEANA Cloud*. Available at: <http://pro.europeana.eu/structure/europeana-cloud> (accessed 29 June 2015).
- Ganguly R (2015) *Roles of e-Infrastructure, PHAIDRA*. Available at: <http://phaidra.univie.ac.at/o:387245> (accessed 29 June 2015).
- GETTY. *What is LOD?* Available at: <http://www.getty.edu/research/tools/vocabularies/lod/#definition> (accessed 29 June 2015).
- Giaretta D (2011) *Advanced Digital Preservation*. Berlin: Springer.
- Gladney H M (2009) Long-term preservation of digital records: Trustworthy digital objects. *American Archivist* 72(2): 401–435.
- H2020 Project Big Data Europe. Available at: <http://big-data-europe.eu> (accessed 29 June 2015)
- Haag D (2011) Persistent Object Identifier – Linked Open Data Manifesto. In: *Persistent object identifiers seminar*, The Hague, The Netherlands, 14–15 June 2011.
- Hamm M and Becker C (2011) Impact assessment of decision criteria in preservation planning. In: *8th International conference on digital preservation of digital objects*, Singapore, 1–4 November 2011, pp. 56–61.
- Hartig O (2009) Provenance information in the web of data. In: *LDOW2009*, Madrid, Spain, 20 April 2009. Available at: <http://www.dbis.informatik.hu-berlin.de/fileadmin/research/papers/conferences/2009-ldow-hartig.pdf> (accessed 4 August 2015).
- Henneken E (2015) Unlocking and sharing data in astronomy, linked data and the charm of weak semantics. *Special Bulletin of the ASIS&T* 41(4): 40–43.
- Hey T (2012) The fourth paradigm – Data-intensive scientific discovery, e-science and information management. *Communications in Computer and Information Science* 317(1).
- Holdsworth D (2007) *Instalment on Preservation Strategies for Digital Libraries. Digital Curation Manual. Version 1.0*. Available at: http://www.rin.ac.uk/system/files/attachments/Preservation_Strategies.pdf (accessed 29 June 2015).
- ICPSR *Data Management and Curation. Data Management Plan Resources and Examples*. Available at: <http://www.icpsr.umich.edu/icpsrweb/content/datamanagement/dmp/resources.html> (accessed 29 June 2015).

- ICPSR *Trusted Digital Repositories*. Available at: <https://www.icpsr.umich.edu/icpsrweb/content/datamanagement/preservation/trust.html> (accessed 29 June 2015).
- IFLA (2012) *The Role of Libraries in Data Curation, Access, and Preservation: An International Perspective*. Session 116 – Science and Technology Libraries, 14 August 2012. Available at: <http://www.ifla.org/news/the-role-of-libraries-in-data-curation-access-and-preservation-an-international-perspective> (accessed 29 June 2015).
- IFLA (2014) *About Digital Libraries*. Available at: <http://www.ifla.org/about-digital-libraries> (accessed 29 June 2015).
- IFLA Study Group on the Functional Requirements for Bibliographic Records (1998) *Functional Requirements for Bibliographic Records Report*. Munich: KG Saur Verlag.
- Innocenti P, Smith M, Ashley K, et al. (2011) Towards a holistic approach to policy interoperability in digital libraries and digital repositories. *International Journal of Digital Curation* 6(1): 111–124.
- InSPECT Project. Available at: <http://www.significantproperties.org.uk/> (accessed 29 June 2015).
- InterPARES Trust. Available at: https://interparestrust.org/trust/about_research/studies (accessed 29 June 2015).
- iPres (2013) *10th International conference on preservation of digital objects* (eds J Borbinha, M Nelson and S Knight), Lisbon, Portugal, 2–5 September 2013.
- ISO 9000 *Family – Quality Management*. Available at: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=42180 (accessed 21 April 2015).
- ISO 14721 (2012) *Space Data and Information Transfer Systems – Open Archival Information System (OAIS) – Reference Model*. Available at: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=57284 (accessed 21 April 2015).
- ISO 16363 (2012) *Space Data and Information Transfer Systems – Audit and Certification of Trustworthy Digital Repositories*. Available at: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=56510 (accessed 21 April 2015).
- ISO/IEC 25010 (2011) *Systems and Software Engineering Systems and Software Quality Requirements and Evaluation (SQuaRE) System and Software Quality Models*. Available at: http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=35733 (accessed 21 April 2015).
- ISQ *Information Standards Quarterly* (2010) Digital Preservation. Special Issue 22(2).
- Jaques Y, Anibaldi S, Celli F, et al. (2012) Proof and Trust in the OpenAGRIS implementation. In: *Proceedings of the international conference on Dublin Core and metadata applications*, Kuching, Sarawak, Malaysia, September 3–7 2012, pp. 33–37.
- Kulovits H, Kraxner M, Plangg M, et al. (2013) Open Preservation Data: Controlled vocabularies and ontologies for preservation ecosystems. In: *10th International conference on preservation of digital objects, iPRES 2013* (eds J Borbinha, M Nelson and S Knight), Lisbon, Portugal, 2–5 September 2013, pp. 63–72.
- Lavoie B (2014) *OAIS Introductory Guide. DPC Technology Watch Report*. 2nd edn. Available at: <http://www.dpconline.org/newsroom/not-so-new/1379-digital-preservation-coalition-publishes-oais-introductory-guide-2nd-edition-technology-watch-report> (accessed 4 August 2015).
- LIBER (2014) *3rd LIBER workshop on digital curation. Keeping data: The process of data curation*, Vienna, Austria, 19–20 May 2014.
- Library of Congress. *National Preservation Research Agenda for the Human Record: Scientific Research Focuses of the Library of Congress Preservation Directorate*. Available at: <http://www.loc.gov/preservation/scientists/projects/agenda.html> (accessed 21 April 2015).
- Library of Congress. *PREMIS. Preservation Metadata Maintenance Activity*. Available at: <http://www.loc.gov/standards/premis/> (accessed 29 June 2015).
- Library of Congress. *Preservation Metadata: Implementation Strategies (PREMIS) Ontology*. Available at: <http://id.loc.gov/ontologies/premis.html> (accessed 29 June 2015).
- Library of Congress (2012) *PREMIS Data Dictionary for Preservation Metadata, Version 2.2*. PREMIS Ed. Committee. Available at: www.loc.gov/standards/premis/v2/premis-2-2.pdf (accessed 4 August 2015).
- Linked Content Coalition (2012) *LCC Identifiers Workstream Identifiers Specification. Version 0.2*. Available at: <file:///C:/Users/Solodovnik/Downloads/Identification%20-%20LLC%20specifications%20identifiers%20v0.2a.pdf> (accessed 29 June 2015).
- LINKED HERITAGE Project (2013) *D2.2 State of the Art Report on Persistent Identifier Standards and management tools. Report*. Available at: <http://www.linkedheritage.eu/index.php?en/215/persistent-identifiers> (accessed 29 June 2015).
- LOD2 Project. *LOD2 Stack*. Available at: <http://stack.lod2.eu> (accessed 29 June 2015).
- MetaArchive Cooperative (2010) *TRAC Audit Checklist*. Eudocopia Institute.
- Miller E and Ogbuji U (2015) Linked data design for the visible library. *Linked Data and the Charm of Weak Semantics, Special Section, Bulletin of the ASIS&T* 41(4): 23–39.
- OAI9 (2015) *Workshop on Innovations in Scholarly Communication. Digital curation and preservation of large and complex scientific objects*. CERN, Geneva, Switzerland, 17–19 June 2015. Available at: <https://indico.cern.ch/event/332370/> (accessed 29 June 2015).
- OR2015 (2015) *10th International conference on open repositories*, Indianapolis, USA, 8–11 June 2015. Available at: <http://www.or2015.net/> (accessed 29 June 2015).
- PERICLES Project. Available at: <http://pericles-project.eu/page/about> (accessed 29 June 2015).

- PERICLES Project. *DELIVERABLE 4.1 Initial version of environment information extraction tools. Report*. PERICLES Consortium. Available at: http://www.pericles-project.eu/uploads/files/PERICLES_WP4_D4_1-Initial_version_environment_information_extraction_tools-V1_0.pdf (accessed 29 June 2015).
- PERICLES Project. *Linked Resource Model (LRM)*. Available at: <http://pericles-project.eu/tagsearch/tag/lrm> (accessed 29 June 2015).
- PHAIDRA. *The Ten Commandments for Policy*. Available at: <https://phaidraservice.univie.ac.at/en/phaidra/policy/> (accessed 29 June 2015).
- PLATO Planning Tool. Available at: <http://www.ifs.tuwien.ac.at/dp/plato/intro/> (accessed 29 June 2015).
- PREFORMA Project. *PREservation FORMAts for culture information/e-archives*. Available at: <http://www.preforma-project.eu/> (accessed 29 June 2015).
- Rauber A (2014) Data management plans: A good idea, but not sufficient. In: *3rd LIBER workshop on digital curation. Keeping data: The process of data curation*, Vienna, Austria, 19–20 May 2014, Available at: http://liber2014.univie.ac.at/fileadmin/user_upload/DOEVL_events/Liber2014_pics/140519_liber_processpreservation.ppt (accessed 3 August 2015).
- RDA. *Active Data Management Plans RDA IG*. Available at: <https://rd-alliance.org/groups/active-data-management-plans.html> (accessed 29 June 2015).
- Reilly SK (2013) *Positioning Libraries in the Digital Preservation Landscape*. Available at: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/mow/VC_SKReilly_28_A_1420.pdf (accessed 29 June 2015).
- Semantic Web Company (2013) *The Semantic Puzzle. The LOD Cloud is Dead, Long Live the Trusted LOD Cloud*. Available at: <http://blog.semantic-web.at/2013/06/07/the-lod-cloud-is-dead-long-live-the-trusted-lod-cloud/> (accessed 29 June 2015).
- Skinner K and Halbert M (2009) MetaArchive: A cooperative approach to distributed digital preservation. *Against the Grain* 21(1): art.6.
- Society of American Archivists (2005) *A Glossary of Archival and Records Terminology*. Available at: <http://www2.archivists.org/glossary> (accessed 29 June 2015).
- Subirats I and Zeng ML (2013) *LODE-BD Recommendations 2.0: How to Select Appropriate Encoding Strategies for Producing Linked Open Data (LOD)-Enabled Bibliographic Data. Report*. Rome: Food and Agriculture Organization of United Nations. Available at: <http://aims.fao.org/lode/bd> (accessed 29 June 2015).
- Subirats I, Zeng ML and Keizer J (2011) Metadata approaches for shareable and LOD-enabled bibliographic data from open repositories: In: *Proceedings of the international conference on Dublin Core and metadata applications*, The Hague, The Netherlands, 2011, pp.184–186.
- Swan A, Gargouri Y, Hunt M, et al. (2015) *Open Access Policy: Numbers, Analysis, Effectiveness. Pasteur4OA Work Package 3 Report*. Available at: <http://eprints.soton.ac.uk/375854/> (accessed 4 August 2015).
- Tammaro AM and Casarosa V (2014) Research data management in the curriculum: An interdisciplinary approach. *Procedia Computer Science* 38: 138–142.
- Taverna Workflow Management System. Available at: <http://www.taverna.org.uk/> (accessed 29 June 2015).
- Trusted Digital Repositories and Audit Checklist (TRAC) (2007) *OCLC. Version 1.0*. Available at: https://www.crl.edu/sites/default/files/d6/attachments/pages/trac_0.pdf (accessed 21 April 2015).
- TrustedDigitalRepositories.eu (2010) *European Framework for Audit and Certification of Digital Repositories*. Available at: <http://www.trusteddigitalrepository.eu/Trusted%20Digital%20Repository.html> (accessed 29 June 2015).
- UC Curation Center (2015) *Digital Curation Foundations, Version 2.0*. Available at: <https://wiki.ucop.edu/download/attachments/171216514/UC3-curation-grundlagen-v1.6.pdf?version=2&modificationDate=1421785499000> (accessed 29 June 2015).
- UNESCO/UBC (2012) *The Memory of the World in the Digital Age: Digitization and Preservation. Vancouver Declaration*. Canada, 26–28 September 2012.
- UNESCO/UBC (2013) *Vancouver Declaration on Digitization and Preservation*. Available at: http://www.unesco.org/new/en/communication-and-information/resources/news-and-in-focus-articles/all-news/news/unesco_releases_vancouver_declaration_on_digitization_and_preservation/#.VZFmGvntmko (accessed 29 June 2015).
- W3C (2011) *Library Linked Data Incubator Group: Use Cases. Report*. 25 October. Available at: <http://www.w3.org/2005/Incubator/lld/XGR-lld-usecase-20111025/> (accessed 21 April 2015).
- Weidner AJ and Alemneh DG (2013) Workflow tools for digital curation. *Code 4 lib Journal* 20.
- White M (2015) Mining the archives: Metadata development and implementation. *Ariadne* 73.
- Wikipedia. *Digital Repository Standards Development*. Available at: http://en.wikipedia.org/wiki/Trustworthy_Repositories_Audit_%26_Certification#/media/File:Digitalrepositorystandards.png (accessed 29 June 2015).
- Zenodo. Available at: <http://zenodo.org> (accessed 29 June 2015).
- Zenodo (2014) *Schema for the Description of Research Data Repositories – RFC. Version 2.2*. Available at: <http://zenodo.org/record/11748#.VZGcRfntmko> (accessed 29 June 2015).

Author biographies

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Paolo Budroni has worked at the University of Vienna since 1991, initially heading the Office of Science Documentation at the Liaison Office. He managed the

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The Universal Procedure for Library Assessment: A statistical model for condition surveys of special collections in libraries

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Abstract

To project the needs for conserving and preserving special collections in libraries, the Flanders Heritage Library foundation developed the Universal Procedure for Library Assessment (UPLA), a model for damage assessment. This tool allows libraries to independently survey the physical condition of their collections. It also provides Flanders Heritage Library with the opportunity to collect much-needed statistics for policy making. UPLA describes the condition of the collection as a whole, based on a random sample of 300 items. Each of these items is assessed on 22 types of damage. Because of the systematic approach of the method, the results can be used for benchmarking: both over time and between libraries.

Keywords

Cultural heritage management, principles of library and information science, preservation and conservation, collection development, special collections/rare books

Heritage libraries in Flanders

For centuries, Flanders (the northern part of Belgium) has been playing a significant role as a documentary heritage production centre. Manuscripts, books, newspapers, magazines and ‘grey literature’ are held in many heritage institutions within this region. These special or, as we call them, heritage collections are held in a variety of institutions, including research and public libraries, archival departments, documentation centres, museums, abbeys and convents. The volume of the collections held and the (financial and staff) resources available to these institutions for the care of their heritage collections differ considerably. However, they all share a common goal: the long-term conservation and preservation of our written and printed cultural heritage. See Figure 1.

Until recently, libraries in Flanders holding collections of historical importance were not considered a sector of their own. Despite the volume and cultural

value of their collections, which include many masterpieces, heritage libraries continued to remain in the background. Their relative invisibility, combined with a lack of continuity and the absence of structural support made it impossible for these libraries to adequately respond to the many challenges faced today.

To change this situation and to provide an impetus for a more structured policy framework for heritage libraries, the Flanders Heritage Library foundation¹ was established at the end of 2008. Flanders Heritage Library is a network comprising six major libraries, some of which are inherently anchored in the academic world: the Hendrik Conscience Heritage

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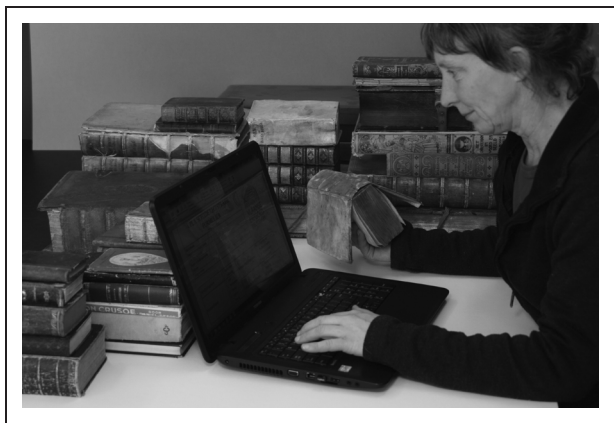


Figure 1. Marijn de Valk assessing damages according to the UPLA method. Photo: J. Goedemé.

Library in Antwerp, the Bruges Public Library, the Limburg Provincial Library and the university libraries of Antwerp, Ghent and Leuven.

Together, they are committed to building and sharing expertise in the preservation, bibliographic description, digitisation and accessibility of heritage library collections throughout the sector as a whole. The objectives of Flanders Heritage Library are clearly outlined in the Cultural Heritage Decree of the Flemish Community. These same goals are included in the articles of association of the Flanders Heritage Library foundation:

- To harmonise collection development policies between partner libraries, based on collection subject profiles.
- To develop a common collection policy for ‘Flandrica’, particularly for publications of importance to Flanders from a cultural or historical point of view or because of their heritage value; in relation to the former, investigate the possibilities for organizing a supplemental regional legal deposit.
- To develop and spread expertise in the area of preservation of heritage collections.
- To catalogue heritage collections and to develop expertise around metadata and standards for heritage collections.
- To digitise heritage collections.
- To create a solution for the long-term preservation of and access to digitised and born-digital heritage collections.
- To organise and participate in communication initiatives to raise public awareness of heritage libraries in Flanders and to develop competence in the area of promoting collection use and dissemination.

Caring for books

In 2011, the University of Antwerp conducted a survey among 25 heritage libraries on behalf of Flanders Heritage Library. The purpose of the survey was to establish the level of preservation and conservation of library collections and the extent to which these collections have been digitised and made accessible through (online or offline) cataloguing. The outcome of the survey was published in a report with a telling name: *De wet van de remmende achterstand* [*The Law of the Inhibiting Arrears*] (Capiou et al., 2012). The survey paints a worrying picture of the sector of heritage libraries in Flanders. The situation is particularly precarious when it comes to the physical care of the collections.

The majority of libraries lack insight into the physical condition of their collections, making it impossible to develop professional programmes for collection care and preservation. The meagre financial resources are usually directed towards the restoration of a handful of (master)pieces and rarely towards a more comprehensive approach that involves the complete collection. Most institutions lack the time and expertise to remedy this situation.

To provide heritage libraries with the insight and tools needed for establishing strong policies regarding damage prevention and remediation, Flanders Heritage Library developed a damage assessment model in 2013–2014. The model uses a reliable sampling method to efficiently and pragmatically gain insight into the physical condition of library collections and into the level of accessibility. The results of these random checks are then used to assess the ‘need for conservation’ (i.e. the amount of work required to execute the necessary preservation and conservation actions), allowing institutions to draw up a tailor-made preservation policy and a collection care plan.

At the end of 2012, Flanders Heritage Library assigned the task of developing the model to book restoration company Boekrestauratie De Valk from Middelburg, the Netherlands, in partnership with paper conservation company Hoogduin Papierrestauratoren, also based in the Netherlands. The project was co-managed by Eva Wuyts and Sam Capiou from Flanders Heritage Library. In addition, a group of conservation experts and librarians from Flanders and the Netherlands acted as a sounding board.² This way, the initiators of the project were able to ensure that the methodology was subscribed to by the field.

Considering the limited resources of most heritage libraries, Flanders Heritage Library determined that the new model had to meet two requirements:

- First of all, the model ought to collect data at the *collection* level, based on a representative

sampling method. This would heavily reduce the time needed for a collection screening. Assessing damage for each individual item in a collection would be too time-consuming and would mainly serve an *object*-driven approach.

- Secondly, heritage library staff ought to be able to independently execute the damage assessment. In other words, the model could not be solely aimed at book restorers; it had to be suitable also for use by ‘laymen’ who received some basic training. This would reduce costs and – not unimportantly – it would increase knowledge and awareness about collection care in heritage institutions. All library staff involved would have to complete a special training programme. The expertise gained during these training sessions, as well as the (renewed) introduction to the collections held in their own library, were to benefit the staff even after the damage assessment was completed.

From UPAA to UPLA

Rather than establish an entirely new methodology, we adopted a proven methodology and modified it to suit the specific requirements of library collections. The methodology selected was the Universal Procedure for Archive Assessment (UPAA), an instrument developed in the early 1990s by the National Archives of the Netherlands for the purpose of assessing archival collections. UPAA has more than earned its status: in addition to the Netherlands, it is used in Croatia, the Nordic countries, Indonesia, Romania, Russia, South Africa, Sri Lanka and the UK.

The sampling method used in the UPAA and UPLA models is based on the principles of French statistician Pierre Gy. To select a sample that is representative of the collection, the shelf capacity (in linear metres) and the average number of books per metre have to be determined first. As a guiding principle, the sample size is set to 300 items per collection. Based on the total capacity, a constant interval is computed. This interval is then used to single out 300 discrete areas of one linear metre each. Within every one of these areas, a randomly generated countdown value decides which item will serve as the actual sample. This method has been tested in various archives and produces a 95% accuracy rate, signifying that the results may vary by a margin of 5% above or below the final figure. See Figure 2.

UPLA versus UPAA

Despite the fact that the UPAA and UPLA models are closely related, there are quite a number of distinct differences and even points for improvement. Firstly, only

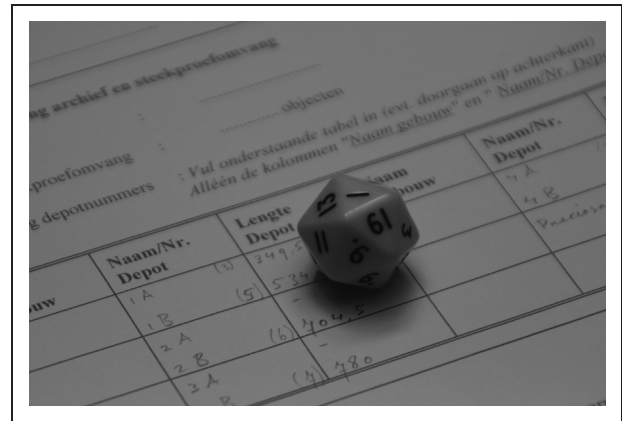


Figure 2. A special die is used to identify the linear metre in which the first sample item is selected. Photo: Marijn de Valk.

some of the types of damage applicable to archives also apply to library collections. The UPAA model mainly focuses on the condition of the paper, with little attention given to the binding. The UPLA model – designed more specifically for traditional library collections – takes into account a wider range of materials that may be encountered, such as linen, leather and parchment. Photos, charters, maps and modern media such as CDs and tapes are excluded under the UPLA model. On the other hand, newspapers and unbound (archival) materials are taken into account.

A second, more fundamental difference lies in the fact that the UPAA model considers accessibility – the ability to actually handle the document without causing further damage to its content – to be the main criterion for assessment. This is quite logical, given that archives must be preserved for legal purposes and that their sources must remain accessible to future generations. For this reason, the severity of damage to an object assessed under the UPAA model will depend on its impact on the object’s accessibility. Naturally, the accessibility of a source is a primary concern for heritage libraries as well. However, to book historians and other examiners, the physical appearance of books is equally important. The scientific and cultural value of books and their bindings is not only derived from their content; the object itself holds value as well.

This results in a different method for damage assessment. The UPAA method simply determines the severity of damage by assessing the impact of user handling on the physical condition of the document. The UPLA model makes it a two-step process. First, the extent of the damage is assessed. Then, the method examines whether normal use of the item is likely to worsen the damage. This two-step approach facilitates the overall assessment process, rendering more reliable and nuanced at the same time. For instance, where a

volume of archival documents may be classified under the UPAA model as ‘not accessible’ and thus ‘seriously damaged’ due to containing one single sheet of heavily felted paper, the same object would be classified under the UPLA-model as ‘moderate damage’ (only one sheet) but ‘not accessible’.

Finally, the UPLA model identifies several types of damage that can render a book’s physical condition unstable. There are three main groups: intrinsic decay, biological damage and red rot. Intrinsic decay includes damage from acidification of the end papers, acidification of the text block, and ink and copper corrosion, similarly to the definition of this term by Metamorfoze, the Dutch National Programme for the Preservation of Paper Heritage. Biological damage includes mould and rodent damage. In all cases, the presence of mould or any signs of insect damage are considered urgent, unless recent tests have confirmed the contrary. All types of damage mentioned above will worsen over time, even if the item is never used. That is why the UPLA model also examines the (in)stability of a library collection in addition to the accessibility of the objects. These types of damage require urgent preservation measures. An UPLA report that pinpoints areas that require immediate action will give policy makers of the affected institutions the backup they require.

Twenty-two types of damage

The focus on books as objects is clearly illustrated in the UPLA assessment method. The exterior of the book, i.e. the cover, is examined first. Then, the book is opened to verify that the essential parts are structurally solid. After all, books are objects that move as they are opened and closed. Next, the text block is assessed for damage. See Figure 3. A total of 22 types of damage have been identified for the damage assessment process, classified in four major groups:

Damage to the cover:

1. Dust and surface dirt
2. Outer lining in poor condition
3. Red rot
4. Harmful tapes and repairs
5. Loose fragments
6. Missing fragments
7. Damaged cover cores
8. Damaged fasteners and fittings

Damage to the construction:

9. Warping of covers and text block
10. Damaged cover binding and joints
11. Damaged sheet and signature joints

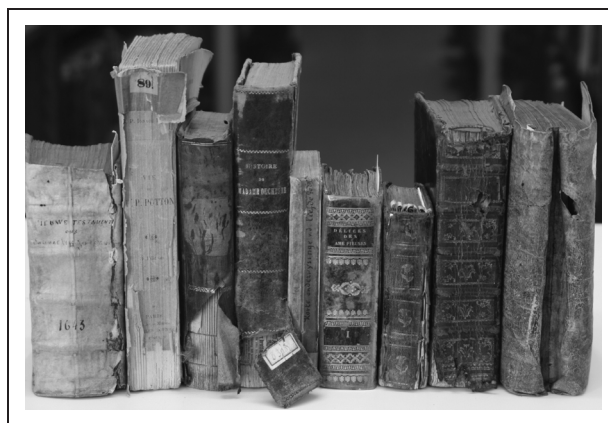


Figure 3. Damaged books. Photo: Marijn de Valk.

Damage to the text block:

12. Dust and surface dirt
13. Harmful tapes and repairs
14. Gaps, tears and folds
15. Felting
16. Stuck sheets
17. Acidification of end papers
18. Acidification of text block
19. Foxing
20. Ink corrosion and copper corrosion

Biological damage:

21. Mould damage
22. Rodent damage

An important tool for performing an UPLA assessment is the ‘damage atlas’, which provides insight into the 22 types of damage and their urgency, based on images and clear definitions. In 2007, the Metamorfoze programme issued *Schadeatlas Archieven*, a tool for assessing and classifying damage to archival documents. Its English translation as *Archives Damages Atlas* followed in 2010. In partnership with Metamorfoze, Flanders Heritage Library then published *Schadeatlas Bibliotheken [Libraries Damage Atlas]* at the end of 2014 (De Valk, 2014). The book is a useful instrument even separate from an UPLA assessment and is freely available in print format or online. The atlas will be made available in English in due course.

To measure is to know

Using the damage atlas as a guideline, 300 selected items from a collection are meticulously screened, and their various types of damage are recorded in a database. Results are automatically bundled and

presented in a number of tables across four worksheets in an Excel spreadsheet. The first worksheet details the accessibility of the collection as a whole in percentages, as well as the degree of instability detected. The second worksheet provides a list of all the metadata elements, while the third worksheet lists the damaged objects that are not accessible, or in other words, the percentage of books that will get damaged even further through normal use.

Naturally, the automatic data processing method offers an in-depth analysis as well. The fourth table, on the last worksheet, is more comprehensive and lists all 22 types of damage followed by the corresponding number of books from the sample. Four different categories of damage can be distinguished:

- Serious damage – handling the item will worsen the damage
- Serious damage – no risk of additional damage when handling the item
- Moderate damage – handling the item will worsen the damage
- Moderate damage – no risk of additional damage when handling the item

The default statistical analysis for each library consists of these four worksheets. However, the data collected can be used for further analysis. Specific damage type combinations and details retrieved from metadata may prove very useful to some libraries. For instance, when we know the percentage of books containing a metal lock or clasp and whether these books have been boxed, we may deduce the number of books with metal fittings that may cause damage to adjacent books. Or we can determine the number of books that are seriously damaged due to dust or dirt and that also show signs of mould damage. Such information can provide a starting point for a cleaning programme. However, further analysis and comparison of UPLA statistics against each other and against storage conditions will require some custom reporting.

As each UPLA assessment is performed in the same uniform manner, the results of separate assessments can be compared against one another. Flanders Heritage Library plans to bundle the (anonymised) results of all UPLA assessments in Flanders in a single registry. This umbrella database will allow for benchmarking of individual institutions and will facilitate policy recommendations regarding the preservation of Flemish heritage library collections. After some time, libraries may opt to repeat the assessment process, allowing them to monitor certain (intrinsic) types of damage or even their own conservation policies.

UPLA put to the test

We decided to test the UPLA model prior to making the instrument generally available. The UPLA model was tested mid 2013 on the collection of the Ruusbroecgenootschap library in Antwerp. This library proved extremely well suited for the test as it encompasses a diverse collection that includes incunabula and a vast range of ancient prints, but also many modern works, magazines and brochures held across several stack rooms. Furthermore, the library is used intensively, resulting in a wide range of damage to its collections.

A total of 299 samples were selected from 2850 metres of shelving filled with books. A detailed form to record the damage was completed for each selected item. In this case, the test was carried out by two teams of assessors. Team A consisted of so-called ‘laymen’ with little to no knowledge about damage assessment. Team B consisted of book restorers. The latter were able to more easily identify damage, listing more types of damage across all samples. Nevertheless, the final results of the screening process produced by both teams were very similar. This demonstrates that ‘laymen’ are capable of performing these assessments autonomously, especially if they receive proper training. See Figure 4.

The test week proved to be a positive experience for everyone involved. The team managed to screen the entire collection in eight days, thanks to the input from the book restorers and the good teamwork with the library’s own staff, who were of course also familiar with the collection and the layout of the stack rooms. When completed, the head librarian of the Ruusbroecgenootschap library stated that the assessment was hugely beneficial and crucial for gaining valuable insight. This indicates that the model was successful. It collected valuable policy-relevant



Figure 4. Sam Capiou (Flanders Heritage Library) and Hilde Schalkx (Hoogduin Papierrestauratoren) testing the UPLA model on the collection of the Ruusbroecgenootschap library in Antwerp. Photo: Marijn de Valk.

statistics about the library collection as a whole, and increased awareness among the library's own staff. Meanwhile, the process of implementing the resulting recommendations regarding the storage and placement of books inside the Ruusbroecgenootschap library has already been initiated.

Getting started with UPLA

Flanders Heritage Library has made the UPLA model freely available to the entire heritage sector. The organisation has also set up the necessary support framework to improve the overall quality of the screening process and to ensure that the method is implemented correctly. That helps ensure reliable results that can be incorporated in the joint registry for library collection damage.

Institutions wishing to perform a damage assessment using the UPLA model can register their library staff for training. A two-day training workshop provides the perfect starting point for an UPLA assessment. It focuses on knowledge of materials, book terminology and damage identification as defined in the model. Participants are assisted by the *Libraries Damage Atlas*, which provides an abundance of illustrated examples.

In addition, Flanders Heritage Library provides the opportunity to consult with a book restorer who is familiar with the UPLA model, thus guaranteeing efficiency and quality throughout the assessment process. Essentially, these experts could be put in charge of a UPLA project from start to finish. However, to avoid missing out on a great opportunity to build internal expertise, we recommend that heritage libraries perform these screening tasks autonomously with guidance and support from an expert.

For instance, the expert could initially assist library staff with the assessment of books. After completing the appropriate training and with the *Libraries Damage Atlas* in hand, library staff would then perform the remainder of this task autonomously. An UPLA assessment is estimated to take up to three full days, but these do not need to be consecutive. It is generally easier to schedule in six half-days. A phased assessment process including occasional breaks will also benefit the overall quality of the project. During the last half day of the assessment, the expert could once again be available to answer questions.

Impetus for policy reform

At the time of writing this article, the first UPLA assessment is yet to commence. However, we firmly believe that libraries who decide to execute such an

assessment are taking a first important step towards improving collection care plans and preservation policies for their heritage collections. The reports they receive upon completion of their assessments will provide a bird's-eye view of the current state of their collections. The UPLA model is not a rigorous screening of each and every item in a library's collection, nor will it provide the library with a ready-made remedial approach. However, it is the preferred tool for those heritage libraries wishing to get to grips with their collections and with the associated challenges that are sometimes unfamiliar or overwhelming.

The UPLA model is equally recommended for small institutions, as they too will benefit from the results. After all, the guiding principles behind an UPLA assessment can be summarised in three words: pragmatic, efficient and uniform.

- Pragmatic – because the UPLA assessment can be executed by the library's own staff, even by 'laymen'. If needed, external experts can be consulted to help guide the process. The types of damage to be recorded are kept to a limited number to avoid collection of non-relevant data.
- Efficient – because the amount of time invested in the assessment is relatively minor in comparison to the vast amount of knowledge gained throughout the process. It takes approximately seven working days for two library staff members to fully complete an UPLA assessment.
- Uniform – to ensure that assessment results can be compared against one another in the future. The guidelines and the *Libraries Damage Atlas* are unambiguous and not too complex. This guarantees that everyone performs these assessments in the same manner and that there is little room for variation.

Every UPLA assessment results in a scientifically-based report which can be used by librarians as a tool for developing custom conservation policies and for advocating to policy makers regarding the need for investments. They should do this at their own pace. Because putting UPLA recommendations into action and taking concrete measures may require additional (internal) assessments. Unfortunately, libraries usually only have limited resources for such projects. Let us hope the joint registry of library collection damage will help the government reflect on the issue, thus providing an impetus for more systematic support of Flemish heritage libraries in the future.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Notes

1. <http://www.flandersheritagelibrary.be>
2. The Sounding Board Group included: Pierre Delsaerd (Information and Library Studies – University of Antwerp), Guy De Witte (De Zilveren Passer), Leen Breynne and Griet Kockelkoren (FARO – Flemish interface centre for cultural heritage), Imke Neels (Restoration Studio, Royal Library of the Netherlands), Marleen Vandenreyt (Limburg Provincial Library), Ludo Vandamme (Bruges Public Library), Elke Van Herck (Department of Collection Management/Museum Collection Care, City of Antwerp), Serafien Hulpiau (Restoration Studio, University of Ghent), Hilde Schalkx (Hoogduin Papierrestauratoren), Dorrit Van Camp (Hendrik Conscience Heritage Library), Ellen Storms (Antwerp University Library), Lieve Watteuw (Illuminare – University of Leuven), Eva Wuyts and Sam Capiou (Flanders Heritage Library).

References

Capiou S, Delsaerd P, Coppoolse D, et al. (2012) *De wet van de remmende achterstand. Preservering, conservering, ontsluiting en digitalisering in Vlaamse erfgoedbibliotheken*. Armarium. Publicaties voor erfgoedbibliotheken.

Antwerp: Vlaamse Erfgoedbibliotheek vzw. Available at: <http://www.vlaamse-erfgoedbibliotheek.be/bron/2544> (English executive summary included) (accessed 15 July 2015).

de Valk M (2014) *Schadeatlas Bibliotheken. Hulpmiddel bij het uitvoeren van een schade-inventarisatie*. Armarium. Publicaties voor erfgoedbibliotheken. Antwerp: Vlaamse Erfgoedbibliotheek vzw. Available at: <http://www.vlaamse-erfgoedbibliotheek.be/bron/3330> (currently in Dutch only) (accessed 15 July 2015).

Author biographies

Sam Capiou is a historian and studied Information and Library Studies at the University of Antwerp. He is currently working as a project officer at Flanders Heritage Library, implementing the UPLA model (among other things).

Marijn de Valk is a self-employed book conservator-restorer in Middelburg, the Netherlands. She developed the UPLA model on behalf of Flanders Heritage Library.

Eva Wuyts studied History at the University of Ghent and completed a postgraduate course in Culture Management at the University of Antwerp. She has been active in the cultural heritage sector in Flanders for quite some time and has been working as a coordinator at Flanders Heritage Library since it was established.



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Cultural heritage digitization projects in Algeria: Case study of the National Library

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Abstract

Currently, the Algerian National Library is striving to digitize Algerian cultural heritage. This exercise became imperative due to physical damage to manuscripts when they were handled during reading. This case study aims to shed light on the challenges of manuscripts and rare books digitization in the Algerian context. In addition, this paper clarifies the Algerian National Library's aspirations and plans to make manuscripts and rare books digitization a thriving endeavor.

Keywords

Digitization, human resources, manuscripts and rare books collections, Algerian National Library, planning digitization

Introduction

The Algerian National Library was defined in executive decree No. 93-149 of 22 June 1993 which identified the Algerian National Library as:

a public institution under the direction of the minister of culture; it aims to collect, store, and diffuse the national cultural heritage and insure openness to the universal heritage. In this context, the National Library is responsible for gathering and cataloging manuscripts collections, coins, medals and rare books of national interest, in addition to launching projects and programs related to its activities. (General Secretariat of Government, 1993)

This legal definition presents the most important activities of the Algerian National Library and explains the Director General's announcement of a new digitization project on the recommendation of the Minister of Culture who described the project as 'a bet that should be earned'.

On this policy announcement, digitization became one of the Algerian National Library's priorities and attracted both human and material resources to make it successful. These resources included budgets for equipment, research and a training program led by

an international expert to develop the local project team's digitization skills.

The manuscripts and rare books selected to be digitized were the most requested by users; more than 2000 manuscripts had been digitized from a list of 4000 between 2009 and 2013. At the end of 2013, digitization was suspended after the project faced a range of technical and organizational issues such as lack of qualified staff, work-flow problems, and the need for adequate equipment.

Since this initial experience, the Algerian National Library has been attempting to overcome its digitization issues and make the project viable through an updated work plan and new equipment.

Objective of the study

This study aims to shed light on the challenges that caused the suspending of manuscripts and rare books digitization in the Algerian National Library. In

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addition, the study clarifies the library's future aspirations to create a successful digitization program.

The Algerian National Library: Background

The Algerian National Library was established in 1835 on the initiative of the civil administrator of the Regency of Algiers *Genty de Bussy*. The Library is the country's oldest cultural institution. Its first home was a state-owned building but it was soon moved into an ex-Janissary barracks in *Bab-Azoun* in 1838 (Wedgeworth, 1993: 44), which was a middle school at that time. Two classrooms were allocated for the National Library and the Museum until 1848.

In 1862 the Algerian National Library relocated to the palace of the *Dey Mustapha Pasha* (a Janissary commander) as its official residence (Venis, 2001).

According to the history of Algeria, this palace was a grandiose Moorish building, which the Algerian National Library occupied from 1862 until 1958 (*Le Soir d'Algerie*, 2009).

In 1954 Algeria's growing population and economic development prompted the construction of a new permanent home for its National Library (Lebel, 1958).

However, the accidental burning of the University Library of Algeria in 1962 obliged the National Library to accommodate the university collections and support university students. Since this accident, the National Library has become the most preferred place for students, academics and researchers (Bouderbane and Boukerzaza, 2010). The new building of the Algerian National Library covers an area of 67,000 m², consisting of 13 floors with a capacity of 2500 readers (Ali, 2014: 118).

Currently, the National Library is the most active cultural institution in Algeria. According to executive decree No 93-149 of 22 June 1993 (General Secretariat of Government, 1993), the Library aims to collect, store, and diffuse the national culture heritage, and ensure openness to the universal heritage, by:

- collecting every printed book, magazine and newspaper published in Algeria;
- preparing and publishing general catalogs and the national bibliographies;
- enabling access to every researcher;
- supporting library and information sciences as well as providing training to university students;
- enriching the cultural life of Algerian citizens and ensuring global cultural openness;
- taking part in scientific research through periodical publications.

According to the executive degree mentioned above, the Algerian National Library must be managed by a Director General, who is responsible for the financial, technical and administrative aspects of the Library. In addition, the Director General represents the Algerian National Library as a cultural institution in international fora and cultural events.

Furthermore, the 1993 executive decree indicates that the Algerian National Library is guided by two main councils. The first one is the Library Council whose members provide oversight of library projects and represent 22 different ministries. The second council is the Scientific Council, a multi-disciplinary advisory board that provides advice related to the scientific activities of the National Library. However, unfortunately these councils have never met because their members have not yet been nominated. Figure 1 illustrates the Library's structure.

Manuscripts and rare books collection in the Algerian National Library: Preservation and accessibility

Despite its recent creation as a modern state, Algeria is a deeply rooted civilization in Northern Africa where archaeological excavations have established early human activity (Sahnouni and De Heizelin, 1998). The National Library of Algeria's manuscripts and rare books collections tell the stories of subsequent civilizations, and represent the wealth of Algerian history. See Pictures 1 and 2 for examples.

The collecting of those manuscripts and rare books began in 1837 when Adrien Berbrugger,¹ a member of the French campaign in the city of Constantine, witnessed the destruction and burning of the local libraries (Fagnan, 1995: 8). During this campaign Berbrugger succeeded in collecting 800 manuscripts. Unfortunately he could transport only 700 manuscripts, because of the long distance between Constantine and Algiers, and the deficiency of transportation caused by the war (Bounfikha, 1999: 74). On the other side of western Algeria M. Le Baron de Slane² gathered 200 multidisciplinary manuscripts from Tlemcen city and carried them from Oran to Algiers by steamboat.

The collection of manuscripts continues today. Table 1 illustrates the historical development of the collection. According to the annual reports of the manuscripts and rare books department in the Algerian National Library from 1962 the Library has collected manuscripts from different sources and now owns 4415 manuscripts and 2456 rare books in fields as varied as: religions, otophone, science of logic, philosophy, history, geography, literature, algebra,

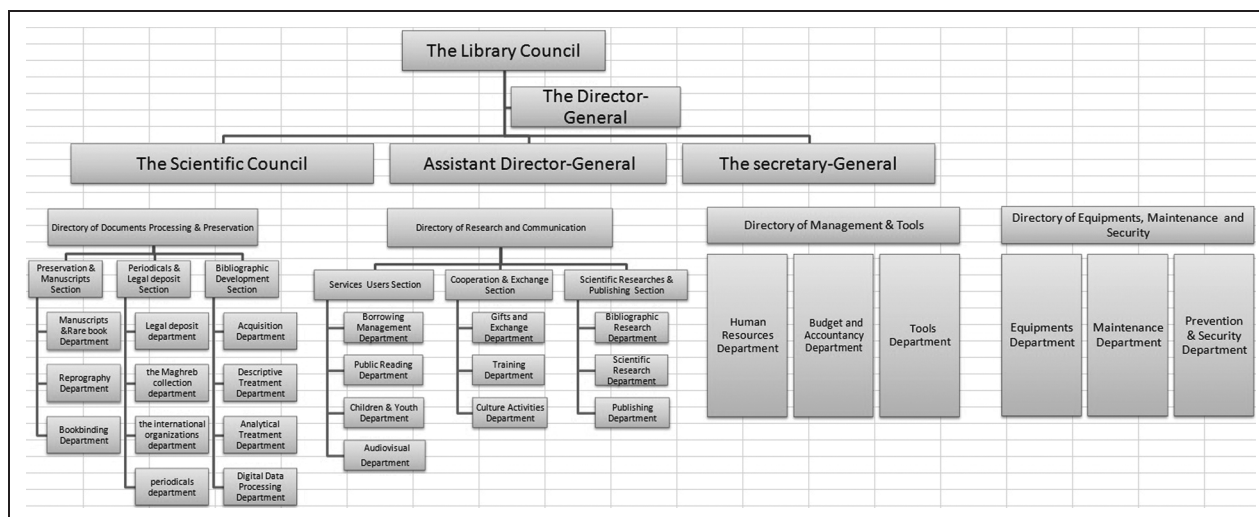


Figure 1. The organizational structure of the National Library of Algeria. Source: Field data, March 2015.

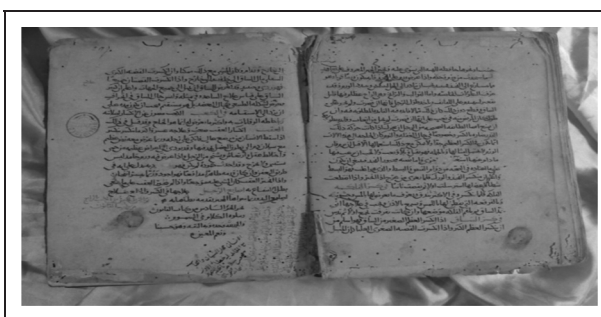


Picture 1. The oldest manuscript in the National Library of Algeria is a chapter from the Quran written on gazelle skin parchment in the third century of *Hegira* (816–913 AD) Source: Field data, March 2015.

geometry, medicine, geriatrics, pharmacy, mathematics, astronomy, music, and black magic in many different languages such as: Arabic, Tamazight,³ Aljamiado,⁴ Persian, Turkish, Latin, Greek, Spanish, Tibetan, Italian, and Syriac.

The Algerian National Library's manuscripts collection, which was first described in the Library catalog of manuscripts in 2013, included a bibliographic description and illustration of 218 rare manuscripts (Ben Mukadem and Ben Yahya, 2013: 18). The second version of the catalog is in the process of being published.

Their rarity and preciousness make the manuscripts and rare books in the Algerian National Library difficult to preserve. For this reason, the Manuscripts and Rare Books Department relies upon the Arabic Union Catalog to accelerate cataloging to make the manuscripts



Picture 2. One of the National Library of Algeria's manuscripts: *The Canon of Medicine: Part Four*, by Avicenne, written in the 12th century with commentary by the doctor of Sultan Saladin, Assad bin Elias bin Gerges Mutran. Source: Field data, March 2015.

ready for digitization. The department cataloged 3554 manuscripts according to the unified local manuscripts cataloging standards authenticated by a local expert in 2010.

Besides cataloging, the Manuscripts and Rare Books Department is now working on manuscript sterilization for restoration and preservation goals. After using an autoclave for a long period of time, the department discovered that this equipment caused health issues to both workers and users. The department therefore suspended the sterilization procedures using the autoclave and has begun the study of the deep freezing method as an alternative solution.

Manuscripts and rare books digitization initiative in the Algerian National Library

The announcement of the manuscripts and rare books digitization project was made in 2009 by the Director General of the National Library; however, this was not the first try. In 2008 and after the experience

Table 1. The development of the National Library of Algeria's manuscripts collection through the years.

Year	Number
1835	700
1962	3000
1994	3568
1996	3573
2008	4217
2012	4293
2013	4413
2014	4415

Source: Field data, March 2015.

gained and equipment received from the Juma Almajid Center for Culture and Heritage,⁵ the Manuscripts and Rare Books Department began to collaborate with the Reprography Department to digitize frequently required manuscripts in order to preserve them from the damage that can be caused by regular use. Picture 3 shows a scanner from this time.

Moreover, since 2009, patrons have been forbidden from physically browsing manuscripts and rare books, so users are required to apply for a digital copy to be made. Through this process, the Reprography Department brings materials from a safe and documents the physical state of manuscripts before and after digitization.

After receiving the order from the Minister of Culture to start a digitization project aimed to preserve and diffuse Algerian manuscripts heritage, the initiative was supposed to turn into a long-term project, but unfortunately the National Library was unable to achieve this. In 2012 the National Agency for Management of Culture Major Project Execution⁶ announced a call for bids to study and manage the digitization of the Algerian National Library's heritage.

An international company which uses robotic bound document scanning systems, Kirtas, obtained the tender and used the Kabis TM700 scanner to digitize the manuscripts. After a while, the scanner started to shred parts from the most fragile manuscripts. To avoid further damage the Manuscripts and Rare Books Department suspended the digitization procedures in March 2013. The only exception is for urgent researcher requests approved by the National Library Director General. In these cases, staff use a Copybook™ Onyx RGB scanner (see Picture 4) purchased in 2012 to digitize the other library resources such as periodicals, and the collection of the Maghreb.

This failed program, which was caused by a lack of understanding of the physical characteristics and fragility of manuscripts and rare books was an



Picture 3. Book eye A2 scanner used in manuscripts and rare books digitization in 2008. Source: Field data, March 2015.



Picture 4. Copybook™ Onyx RGB scanner used in manuscripts and rare books digitization for urgent requests since 2012.

unfortunate episode in the history of the Algerian National Library. The Library came out of this experience with 2257 digitized manuscripts and rare books, stored on DVDs in the Reprography Department without the minimum preservation requirements or standardized bibliographic description. The dilemma facing the Manuscripts and Rare Books Department and the Reprography Department is the knowledge of which department has priority to follow the digitization procedures through metadata creation to providing long-term preservation and networked access. This conflict is caused by two main factors; the first one is the inadequacy of the National Library's organizational structure to support such as a project. The second factor is instability of the general administration because of the continual change of the Director General post (see Table 2).

Table 2. The Directors General of the National Library of Algeria between 1962 and 2015.

Name	Period
Mahmoud Agha Bouayad	1962–1991
AbdelkrimBajdajda	1991–1992
Abdulatif Rahal	1992–1994
Aissa Moussa Mouhamed	1994–2000
Miloud Abbes	2000–2001
AbdelallahBesseriani	2001–2002
Amine Zaoui	2002–2008
Sid Ahmed Oussadit	2008–2010
AzzedineMihoubi	2010–2013
MadjidDahman	2013–March 2015
Bengana Yasser	March 2015–now

Source: Field data, March 2015.

Planning for the future

In order to move the Algerian National Library's digitization program forward, the authors solicited the opinions of staff involved in digitization. This small study was conducted in the Manuscripts and Rare Books Department and Reprography Department of the Library. Both questionnaires and interviews were used to collect information from the working group in charge of digitizing manuscripts and rare books.

Three questionnaires were distributed to the digitization work team members. The first questionnaire was designed to measure the planning level of the digitization project to understand the issues faced in transforming the manuscripts and rare books digitization from an initiative to a sustainable project. The second questionnaire sought responses about the skills and qualifications of the digitization teamwork in the Reprography Department concerning the standardized procedures of manuscripts and rare books digitization. The third questionnaire was designed to gather responses about problems displaying digitized manuscripts through the Library's network.

Discussion of findings

Planning for the digitization project

According to the *Guidelines for Planning the Digitization of Rare books and Manuscripts Collection* (IFLA, 2014), digitization projects need to begin with a set of questions regarding the goals of the project, funding, staffing, equipment, and legal issues:

- What is the vision for the project? What are the goals and objectives?
- Who will use it? How will they use it?
- Who should be involved in the planning?

- Are there external funding opportunities?
- What level of complexity can be achieved?
- What do you want to digitize and why?
- Are there any copyright issues regarding the materials?
- Should the digitization be accomplished in house or by external service providers? Do you have the space, money, and equipment, and expertise? What can an external vendor provide?
- What is the final format of the project? Do you have the means to achieve it?
- Is a social networking component envisioned, such as crowd-sourced transcription or meta-data enhancement?
- How will you incorporate quality management into all stages of the project?

The first questionnaire was designed to understand the extent to which the manuscripts and rare books digitization plan in the National Library of Algeria provided a shared understanding of such steps. The main results were summarized in Table 3 which shows the responses of the digitization team members concerning planning.

The visions and goals of the manuscripts and rare books digitization were clear for most of the project members: all of them emphasize that the plan for digitization is clear and understandable, with confirmation from five team members that its purposes are for both access and preservation. However, there was no consensus of opinion among the project members about their involvement in project planning. The digitization team was divided into equal conflicted groups: three of them confirmed their participation in the planning of the digitization project, while the others affirmed their exclusion from the planning procedures. This conflict seems to be related to the instability within the institution with the program management shifting in 2009 from a group of workers nominated by the Director General to a new project plan ordered by the Minister of Culture.

In regard to external funding, four responses claim an absence for unknown reasons. In addition, there was dissonance regarding selection and copyright. Two responses confirm that the selection of manuscripts and rare books for digitization was based on specific criteria that included copyright while two other responses denied the existence of any specific selection criteria.

The possible reasons for varied perceptions about the program are the lack of information sharing between the teamwork members and ignorance of manuscript and rare books copyright issues.

Table 3. The planning level of the manuscripts and rare books digitization project.

Indicators	Agree	Disagree	Uncertain
Vision and goals	5	1	0
Planning involvement	3	3	0
External funding	1	4	1
Selection and copyright issues	2	2	2
Appropriate equipment	3	3	0
Need for training	6	0	0
Quality management	1	4	1

Source: Field data, March 2015.

There are also conflicting responses concerning the equipment used in the digitization process, suggesting evidence of lapses in knowledge related to the appropriate equipment that should be used in the digitization of manuscripts and rare books.

Digitization skills

According to staff interviews, a contributing factor to the failure of the digitization project was the lack of qualified staff (12 January 2015, personal communication). To better understand the skill level of the project team, a questionnaire was used to determine the familiarity of staff with the standardized digitization procedures outlined in the IFLA *Guidelines for Planning the Digitization of Rare Books and Manuscript Collections* (see Table 4).

The most important feature observed in the responses listed in Table 4 is the presence of uncertainty regarding these procedures as seen by the negative answers. This suggests a disparity in training level within the digitization team.

This variance in understanding of standardized procedures is also evident in knowledge of the care and preparation of materials for digitization. In addition, there seems to be a lack of understanding regarding metadata procedures. On the other hand, the team appears to have a strong grasp of standardized methods of ensuring image quality to achieve proper resolution, colour, depth and lighting.

Based on this evidence, it is clear that the digitization team would benefit from further training with an emphasis on the preparation of manuscripts and metadata.

Access to digital collections

There is much consensus among teamwork members that the Algerian National Library is digitizing for both access and preservation. However, there have been no attempts to make the collections available

Table 4. Digitization skills and qualifications level.

Indicators	Agree	Disagree	Uncertain
Preparing the materials	4	1	0
Metadata	0	5	0
Image quality	5	0	0
Image processing	5	0	0

Source: Field data, March 2015.

Table 5. Network access to digital collections.

Reasons for lack of network access to manuscripts	Responses
Lack of required equipment	5
Lack of metadata	3
Lack of qualified staff	2
Other	1

Source: Field data, March 2015.

on the Library's network. The 2257 digitized manuscripts are now stored on DVDs in the Reprography Department, waiting to be displayed. A third questionnaire sought to discover the prospects for making manuscripts available online. The main findings are summarized in Table 5.

Responses from the work team suggest that lack of equipment is the largest impediment to providing online access to manuscripts. There is a vital need for networks equipment such as servers and file storage.

In addition, the impact of the lack knowledge of metadata is a contributing factor to providing access. Interviews confirm that an ambiguous digitization policy can directly affect the access initiative since department heads in charge of digitization do not share a vision regarding the conditions necessary to provide access.

Conclusion

Clearly, the recent failure of digitization initiatives within the Algerian National Library is not based on a lack of initiative or vision of the need to make these treasures available to scholars and the public. Interviews with staff and questionnaires suggest that problems with the planning process and a lack of shared understanding among team members were the largest contributing factors. As projects such as this falter, library administrators need to reconsider which units and institutions have the ability to organize and implement digitization projects. In addition, intensive training programs on the physical needs of

manuscripts and rare books, metadata standards, and equipment for access are essential.

In conclusion, this paper provides a unique case study and attempts to provide formative evidence toward the improvement of a stalled digitization project in the Algerian National Library. The study shows the interrelated issues that range from planning, communication, training, and availability of appropriate equipment that contribute to the success of a large digitization program. Overall, the study suggests that a functioning organizational structure and stability are essential ingredients to providing the environment required to avoid conflicting views and visions related to a program's mission.

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The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Notes

1. French archaeologist and philologist (1835–1869). Founder and creator of the Museum and Library of Algiers. Graduated from the School of Charters. Secretary to Marshal Clauzel, Bertrand (1772–1842). Member of several scientific committees in Algeria. Founded the Algerian Historical Society.
2. French Orientalist of Irish descent (1801–1878). Member of the Academy of Inscriptions and Letters (elected in 1862). Principal interpreter for the French Army of Africa. Professor of Arabic at the Special School of Oriental Languages in Paris.
3. Berber language.
4. Use of Arabic scripts to transcribe European language.
5. In 2001, the digitization team of Juma Almajid Center for Culture and Heritage came to the National Library of Algeria with Algerian presidential permission to digitize the manuscripts collections, but unfortunately the digital copies left were lost and there is no proof of the manuscripts digitized, not a catalog or even a list, only the digital camera used at that time and some digitization skills for the local team who left the National Library many years ago.
6. A public institution under the direction of the Ministry of Culture has a mission to study and manage major culture infrastructure.

References

Ali S (2014) *Preservation and accessibility of manuscripts in the National Library of Algeria*. Masters Thesis, University of Constantine 2, Algeria.

Ben Mukadem R and Ben Yahya F (2013) *From the Most Rare and Precious Manuscripts in the National Library of Algeria*. Algiers: National Library of Algeria.

Bouderbane A and Boukerzaza K (2010) Les manuscrits de la Bibliothèque Nationale d'Algérie: La numérisation et la recherche scientifique. In: *32nd MELCOM international conference*, Cordoba, Spain, 19–21 April 2010.

Bounfikha F (1999) Algerian manuscript intellectual production at the National Library of Algeria: Analytic study of bibliographic description excluded manuscripts. Masters Thesis, University of Algiers, Algeria.

Fagnan E (1995) *Manuscripts General Catalog of the National Library of Algeria*. Algiers: National Library of Algeria.

General Secretariat of Government (1993) *Journal Officiel: Executive Decree No. 93-149 Containing the Basic Law of the National Library*. Available at: <http://www.joradp.dz/HAR/Index.htm> (accessed 8 August 2015).

International Federation of Library Associations and Institutions (2014) *Guidelines for Planning the Digitization of Rare Books and Manuscripts Collection*. Available at: http://www.ifla.org/files/assets/rare-books-and-manuscripts/rbms-guidelines/ifla_guidelines_for_planning_the_digitization_of_rare_book_and_manuscripts_collections_january_2015.pdf (accessed 8 August 2015).

Lebel G (1958) La nouvelle Bibliothèque Nationale d'Alger. *Bulletin des Bibliothèques de France*. Available at: <http://bbf.enssib.fr/consulter/bbf-1958-10-0691-001> (accessed 18 August 2015).

Sahnouni M and De Heizelin J (1998) The site of Ain Hanech revisited: New investigations of this lower Pleistocene site in Northern Algeria. *Journal of Archaeological Science*. DOI: 10.1006/jasc.1998.0278.

Le Soir d'Algérie (2009) *Dar Mustapha Pacha un Riche Patrimoine*. Available at: www.lesoirdalgerie.com/articles/2009/06/23/article.php?sid=84872&cid=16 (accessed 10 July 2015).

Venis B (2001) *Bibliothèque Nationale d'Alger Ancienne Résidence des Deys d'El Djezaïr*. Available at: algerroif.fr/Alger/bibliotheque_nationale/textes/1_biblio_algeria31.htm (accessed 10 July 2015).

Wedgeworth R (1993) *World Encyclopedia of Library and Information Services*. Chicago, IL: American Library Association.

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Abstracts

قُطُفات

Review Article: Indigenous cultural heritage preservation: A review essay with ideas for the future

مقال: حفظ التراث الثقافي للشعوب الأصلية: مُراجعة نقدية بأفكار مُستقبلية:

Loriene Roy

العدد رقم 41,3 من مجلة الإفلا المُتخصصة:

تعرض هذه المُراجعة النقدية خبرات حفظ التراث الثقافي الخاص بالشعوب الأصلية في المكتبات، وما في يُمكن تحقيقه واستكشافه بعد في هذا المجال الذي لم تطأه الكثير من الأقدام، والذي يُعد أيضًا مجالًا شائغًا قد يلحق الضرر بالمُجتمعات الثقافية التي انتمت هذه المؤسسات على ثرواتها، كما يعرض المقال الفرص الوفيرة؛ لإحداث تغيير والتي تحتاج إلى تغييرات في سلوكيات وأساليب الأجيال.

The digital library in the re-inscription of African cultural heritage

دور المكتبة الرقمية في إعادة وصف التراث الثقافي الأفريقي:

Dale Peters, Matthias Brenzinger, Renate Meyer, Mandy Noble, Niklas Zimmer

العدد رقم 41,3 من مجلة الإفلا المُتخصصة:

لقد تطورت المكتبات الرقمية الأفريقية لما هو أبعد من حوار التسعينيات حول 'الحفظ والتداول' والحاجة إلى تحويل التراث الثقافي بصورة (غير) نظامية إلى مجموعات رقمية، ويكمن التحدي الآن في ذكاء التجاوب مع احتياجات المُستخدم؛ واتباع منهج أكثر نظامية في اختيار المواد المُرقمنة. يتفحص هذا البحث العلاقة التكاملية بين الحفظ والتراث الثقافي والدراسة في دراسة حالة حول وصف وتوثيق اللغات الأفريقية المُنقرضة، يقترح البحث أن تكمن نقطة التركيز الجديدة في الدراسة الإلكترونية، وخلق مساحة أكبر للابتكار التقني والمشاركة الفكرية في إعادة النظر في المكتبة الرقمية، وتصحيح السجلات المؤقتة من خلال ترجمة دراسية جديدة للتراث الثقافي الأفريقي.

Storing and Sharing Wisdom and Traditional Knowledge in the Library

الاحتفاظ بالحكمة والمعارف التقليدية ومُشاركتها في المكتبة:

Jenny Bossaller, Brooke Shannon

العدد رقم 41,3 من مجلة الإفلا المُتخصصة:

تُركز المكتبات التقليدية على المجموعات المطبوعة والمجموعات الناشئة التي تم نشرها أي مرت بمرحلة من المُراجعة، وهو ما يترك مساحة لفقدان المجموعات بعضًا من المعارف، مثل: تلك المعارف والمُعتقدات والخبرات الخاصة بالشعوب الأصلية، تُمثل المكتبات الإنسانية وغيرها من المجموعات غير المطبوعة، نوعًا أقل تقليدية من المعارف، يصف هذا البحث، ويصف البحث العلاقة بين الحكمة والمعرفة في إطار دراسة الممارسات المعلوماتية اليومية لسيدات جامعة كينيا، فقد قامت السيدات بتصوير الفعاليات اليومية ووصف ما رأوه، وأظهر هذا العمل تنوعًا كبيرًا في ما تمثل من حكمة ومعرفة، لأن النساء قد وصفن ذلك فيما يرتبط بتعليمهن، وهو ما يؤكد على الحاجة إلى إعادة النظر في الافتراضات الوضعية في علوم المكتبات وإخراج ما أسسته النساء بالمعارف المُحزنة، ولكن كيف يتم تخزين الحكمة ومُشاركتها؟

The challenges of reconstructing cultural heritage: An international digital collaboration

التحديات في إعادة بناء التراث الثقافي: التعاون رقميًا ودوليًا:

Rachel Heuberger, Laura E. Leone, Renate Evers

العدد رقم 41,3 من مجلة الإفلا المُتخصصة:

إن رقمنة مجموعة Freimann المكونة من أعمال مُميزة تنتمي للدراسة الأكاديمية لليهودية، كانت مُبادرة تعاونية دولية لإعادة إنشاء مجموعة التراث الثقافي اليهودي عبر الإنترنت والتي تعرضت لخسارات فادحة أثناء الحرب العالمية الثانية، تشمل هذه الأعمال أول تعامل مع نصوص يهودية غير مُعاصرة باستخدام أساليب البحث الحديثة، قام المشروع بجمع ما تبقى من المكتبة الأصلية في ألمانيا على نهج فهرس نُشر قبل الحرب ومُقتنيات تم جمعها في الأماكن التي نُفي إليها اليهود الناطقين بالألمانية في الولايات المُتحدة، وتضمن إتاحة النصوص مجانًا، إلى تطوير الدراسة بإتاحة هذا الاكتشاف إلى جمهور واسع وغير محدود، لا تُعد الرقمنة

ضرورة من منظور الحفظ الرقمي ولكنها تسمح للباحثين بتصوير أعمالهم في سياقه الفكري والتاريخي، تنج عن هذا المشروع نماذج للتعاون الدولي والعمل على الرقمنة على نطاق واسع.

Born fi dead? Special collections and born digital heritage, Jamaica

المجموعات الخاصة الرقمية من التراث الثقافي في جاميكا:

Cherry-Ann Smart

العدد رقم 3، 41 من مجلة الإفلا المتخصصة:

تحتل المواد التراثية الثقافية مكانة مميزة في المجموعات الخاصة بالمكتبة، ولكن لم يتم استغلال هذه المواد في التعليم بصورة كافية بسبب أمور متعلقة بإدارة حفظ هذه المواد، وهو التحدي الذي يدعم فكرة حصرها داخل حدود معينة وهو المفهوم الذي قد يؤثر على علاقة القُتبعين وبالتالي يعوق تداول الأبحاث. على العكس، فقد زاد النشر الإلكتروني من تداول التراث الثقافي الذي كتبه الدارسون والمُبدعون، دون اللجوء إلى الوسطاء، يُمثل هذا المحتوى الرقمي منذ بدايته عالمًا جديدًا للمكتبات ملئ بالمسؤوليات في إنتاجه الآن وللأجيال القادمة، تكمن بعض التحديات في البنية التحتية، مثل: الإنترنت وبعضها في العنصر البشري نفسه الذي يحتاج لمزيد من بناء القدرات في مجالات كالنشر والإستراتيجيات الفعالة للحفظ، وهي المهارات الضرورية لخلق تصور كامل لإمكانية فقدان التراث الثقافي والحاجة إلى آليات عملية لإدارة المحتوى، وغير ذلك سيؤدي إلى خسارة التراث الثقافي إلى الأبد.

Digitization of Indian Manuscripts Heritage: Role of National Mission for Manuscripts

رقمنة التراث الهندي من المخطوطات: دور البعثة الوطنية الهندية:

Jyotshna Sahoo, Basudev Mohanty

العدد رقم 3، 41 من مجلة الإفلا المتخصصة:

تملك الهند واحدة من أقدم وأغنى وأكبر مجموعات المخطوطات في العالم، والتي تُعد حارسًا قويًا لتراث الهند الثقافي بمختلف أشكاله ولغاته ونصوصه وموضوعاته، ولكن يُشكل حفظ هذه المخطوطات للقائمين عليها مشكلة حقيقية، لطبيعة البلد الحارة والرطوبة، في هذا السياق، يُقدم البحث تقريرًا بالجهود الجديرة بالثناء التي قامت بها البعثة الوطنية للمخطوطات (NMM) منذ 2003 بتأسيس ودعم 57 مركز مخطوطات و50 مركزًا لحفظ المخطوطات وعمل قاعدة بيانات وطنية للمخطوطات، كما يعرض البحث الوضع الحالي لرقمنة مخطوطات التراث الثقافي الهندي بدءًا من رقمنة مجموعة المخطوطات الخاصة بالمكتبة وصولًا إلى إنشاء مكتبة مخطوطات رقمية يُمكن للعالم بأسره تداول مُمثلياتها.

Preserving digital heritage: At the crossroads of Trust and Linked Open Data

حفظ التراث الرقمي: في مُفترق طرق بين الثقة والبيانات المتصلة المفتوحة:

Iryna Solodovnik, Paolo Budroni

العدد رقم 3، 41 من مجلة الإفلا المتخصصة:

سيظل تداول المصادر التي تم حفظها رقميًا تحديًا مهما تطورت التكنولوجيات الحالية أو المُستقبلية، وهناك الكثير من المعايير وأفضل المُمارسات التي تتناول مُختلف أوجه حفظ المواد الرقمية، وهو الأمر الذي يتطلب سياسات جيدة ومُحددة وخطط لإدارة البيانات تشمل كل مراحل حياة المادة، لتحقيق مستويات عالية من مُشاركة للبيانات واستخدامها على المدى الطويل، تنصح شبكة APARSEN وضع إطار عمل قائم على التبادل؛ للتمهيد لعمل حلقة موثوق بها للبيانات الموصولة، لتمكين المُشاركين في هذه الشبكة من التبادل الدلالي، وهو الذي يقترح البحث أن يتم بعمل خريطة بوصف بيانات LOD-BD، كما يُمكن إثراء هذه الشبكة أكثر بتكنولوجيا LOD2 لحل مشكلة أزمة الثقة، حيث يجب مُتابعة المكتبات ومنحها شهادة ثقة في إطار معايير المُتابعة والاعتماد الأوروبيين.

The Universal Procedure for Library Assessment: A statistical model for condition surveys of special collections in libraries

تقييم المكتبات على المستوى العالمي: نموذج إحصائي حول استقصاءات عن حالة المجموعات الخاصة في المكتبات:

Sam Capiou, Marijn de Valk, Eva Wuyts

العدد رقم 3، 41 من مجلة الإفلا المتخصصة:

صنعت مؤسسة 'Flanders Heritage Library' نموذجًا لمعرفة مدى الدمار الذي لحق بالمجموعات المكتبية ومدى إمكانية الوصول إليها ضمن نموذجًا عالميًا لتقييم المكتبات (UPLA)؛ لحماية الحاجة إلى حفظ وترميم المجموعات الخاصة، يصف هذا النموذج تقييماً إحصائياً لمدى الضرر الذي تتعرض له مجموعة مكتبية، يُحدد مدى الضرر وإمكانية الوصول لها، يُمكن أن يقوم موظفو المكتبة بتطبيق هذا النموذج بأنفسهم بعد الحصول على تدريب ميداني، وهو ما يضمن جمع وتعزيز المعرفة بكيفية العناية بالمواد المكتبية داخل المؤسسة، وتُشكل الإحصاءات التي تم عملها أساساً؛ لوضع وتطوير سياسات الحفظ وبرامج العناية بالمُقتنيات، ويُمكن مُقارنتها بالبيانات التي جمعتها المؤسسات الأخرى، تُعد مؤسسة Flanders مؤسسة كبرى تضم ست مكتبات تراثية في إقليم بلجيكا الشمالي، وقد قامت المؤسسة بوضع هذا النموذج التقييمي في عام 2013-2014.

Cultural Heritage digitization projects in Algeria case study of the National Library

مشروعات رقمنة التراث الثقافي في الجزائر: دراسة حالة من المكتبة الوطنية:

Meriem Boulahlib, Nadjia Ghamouh

العدد رقم 3، 41 من مجلة الإفلا المتخصصة:

تحاول حالياً المكتبة الوطنية الجزائرية رقمنة التراث الثقافي الجزائري، وهو الأمر الذي أصبح ضرورة؛ لما لحق بالمخطوطات من

ضرر نتيجة تداولها وقراءتها، تهدف هذه الدراسة إلى إلقاء الضوء على على التحديات التي تواجه عملية رقمنة المخطوطات والكتب

النادرة في الجزائر، يوضح البحث إلى جانب ذلك، تطلعات المكتبة الوطنية وخططها للتقدم السريع في رقمنة هذه المواد.

摘要

Review Article: Indigenous cultural heritage preservation: A review essay with ideas for the future

评论文章：本土文化遗产保护：一篇包含对未来畅想综述论文

Loriene Roy

IFLA Journal, 41-3, 192-203

此篇文献综述展示了图书馆为本土文化遗产的保护所做出的丰富、有价值的探索与成就。然而这个领域对于那些将现存的珍贵遗产委托于这些机构的文化社区来说，仍然具有敏感性与潜在的危害性。改变这种局面的机遇固然很多，但需要从一代代人们的态度与方式中逐渐地衍变与发展。

The digital library in the re-inscription of African cultural heritage

数字图书馆与非洲文化遗产

Dale Peters, Matthias Brenzinger, Renate Meyer, Mandy Noble, Niklas Zimmer
IFLA Journal, 41-3, 204-210

非洲数字图书馆的发展已经超越了上世纪90年代的“保存或获取”的争论以及随之而来的对文化遗产收藏的(非)系统化的模拟到数字格式的转换冲动。现在面临的挑战是如何对用户需求做出快速反应，并用更具战略性的方法做出数字化选择匹配。本文将通过对非洲消亡语言、文档的描述及个案研究来调查保存、文化遗产和学术间的共生关系。本文认为新的焦点在于数字学术，通过对非洲文化遗产的新的学术理解，使得技术创新与智力能够更多地参与到数字图书馆对短暂性记录的评估、编辑与传播。

Storing and Sharing Wisdom and Traditional Knowledge in the Library

在图书馆中储存与分享智慧和传统知识

Jenny Bossaller, Brooke Shannon

IFLA Journal, 41-3, 211-222

传统图书馆的做法侧重于发展印刷物或者出版物的收藏，这意味着这些文档是经过评估或者一定程度上的审批过程的。这种做法使得大量诸如土著知识、信仰和经验等潜在的知识流于图书馆的收藏之外。人类的图书馆和其他非印刷型收藏仅代表少数的知识形式。本文描述了智慧与知识的关系，该关系源于一个关于肯尼亚女大学生们日常信息实践的研究。她们拍摄每天生活中发生的事物，同时描述她们看到的事物。其中一个发现是智慧与知识的差异表现。由于她们的描述与其教育相关联，因此我们断定这表明在图书馆学中需要重新考虑实证主义假设，也就是这些女性所言的将智慧搬进书库。然而，智慧可以被储存与共享么？

The challenges of reconstructing cultural heritage: An international digital collaboration

重建文化遗产的挑战：一个国际数字化合作项目

Rachel Heuberger, Laura E. Leone, Renate Evers

IFLA Journal, 41-3, 223-229

犹太学术研究——弗莱曼合集(Freimann Collection)的数字化是一项国际性合作，意在虚拟重建二战中遭受重大损失的犹太文化遗产收藏。这些作品包括首次尝试运用现代学术研究方法的前现在犹太宗教文本。建立起战前出版目录后，该项目汇集了残存的原德国馆藏和位于犹太人主要流放区之一(美国)的德语犹太人的收藏。可自由访问的文本能够确保读者无限制的访问，从而增

强学术研究。数字化和虚拟重建不仅从数字化保存的观点上来看是重要的,而且也符合研究者对作品的文化性与历史性意义上的预想。该项目也为今后国际合作与大规模数字化工作流程做出范例。

Born fi dead? Special collections and born digital heritage, Jamaica

产生即消亡?牙买加特色馆藏与原生数字遗产:
特色馆藏与出生数字遗产, 牙买加

Cherry-Ann Smart

IFLA Journal, 41-3, 230-236

关于文化遗产的印刷型特色馆藏在图书馆中占据独特的地位。然而,这些资料的教学和学习潜力可能经常由于保护管理等方面的问题而有待进一步研究。这些挑战强化了其排他性,可能会影响供体关系和无意识地阻碍研究访问。相反地,电子出版则加强了对于原生数字文化遗产产品的访问。没有中介的麻烦,这些原生的数字生产者代表了一个“新的世界秩序”,使得图书馆承载存取与传承的双重责任。部分挑战是基于基础设施层面的,如互联网普及率,另一些则是人为相关的,如出自出版和有效保存策略等方面能力建设需要。这些技术对于充分概念化文化遗产产品缺失的可能和内容管理的可行机制是必不可少的;做不到这点意味着文化遗产产品将真的是“产生即消亡”。

Digitization of Indian Manuscripts Heritage: Role of National Mission for Manuscripts

印度手稿遗产的数字化:手稿的国家使命

Jyotshna Sahoo, Basudev Mohanty

IFLA Journal, 41-3, 237-250

印度是世界上拥有年代最古老、种类最丰富、数量最多的手稿的国家之一。这些手稿作为一种强大的媒介,以多种形式、语言、文稿和主题保存印度文化遗产。对于这些手稿的保管人来说,这个国家炎热、潮湿的气候条件是面临的一个严重问题。此文肯定了手稿的国家使命项目(NMM)自

2003年启动以来所做的努力,包括建立了57家手稿资源中心(MRCs)、50家手稿保存中心(MCCs),以及研发了一个国家手稿数据库。同时,也展示了印度文化遗产数字化的现状,即从手稿的收藏到建立一个全球可访问的数字手稿图书馆(DML)。

Preserving digital heritage: At the crossroads of Trust and Linked Open Data

保存数字遗产:在信任与关联开放数据的十字路口

Iryna Solodovnik, Paolo Budroni

IFLA Journal, 41-3, 251-264

无论是现今还是未来的技术,获取电子化保存的信息资源将都是一项挑战。对于数字对象的保存,有过多的模式、标准和最佳做法。数字对象的管理需要明确定义政策和数据管理计划,涵盖在其特定的生命周期内的所有工作流程。为达到高水平的数据共享和长期的数据再利用,APARSEN建议开发一个具有互操作性的持久性标识符框架,为“关联开放数据的可信任持久标识符环”铺平道路。为实现此语义互操作性环,本文提出用框架的本体映射LODE-BD元数据。用LOD2技术堆可以进一步丰富此环,解决关联数据的生命周期的可信性问题,同时解决大数据的问题。为获得信任,数字图书馆还需要在符合欧洲审计和认证框架的前提下接受审计和认证。

The Universal Procedure for Library Assessment: A statistical model for condition surveys of special collections in libraries

图书馆评估的通用程序:图书馆特色馆藏情况调查的统计模型

Sam Capiou, Marijn de Valk, Eva Wuyts

IFLA Journal, 41-3, 265-271

出于对图书馆特色馆藏的保存及维护的需要,荷兰德斯遗产图书馆基金会开发了一个损坏评估模型,即图书馆评估通用程序(UPLA)。这个模型描

述了图书馆馆藏资源的统计损伤评估。它决定损伤的程度和图书馆资料的可访问性。模型可能由图书馆的工作人员在完成基本培训之后实施。这可以确保通过UPLA评估，图书馆资料收集方面的知识可在组织内得到积累和强化。通过筛选收集到的统计数据是制定保存策略和开展馆藏保护项目的重要基础。他们还可以与其他机构收集的数据进行比较。

弗兰德斯遗产图书馆是一个网络组织，由六个位于弗兰德斯(比利时北部地区)的遗产图书馆组成。2013-2014年间，弗兰德斯遗产图书馆基金会开发了图书馆评估通用程序(UPLA)。

Cultural Heritage digitization projects in Algeria case study of the National Library

文化遗产数字化项目：阿尔及利亚国家图书馆案例研究

Meriem Boulahlib, Nadja Ghamouh

IFLA Journal, 41-3, 272-278

目前，阿尔及利亚国家图书馆正在努力将本国的文化遗产数字化。考虑到阅读手稿时触摸所带来的物理性伤害，这个项目变得十分必要。此案例研究意在充分了解本国手稿与善本数字化存在的挑战。另外，文本亦阐明国家图书馆愿为手稿和善本数字化做出巨大努力的愿望与实施计划。

Sommaires

Review Article: Indigenous cultural heritage preservation: A review essay with ideas for the future

[Article de synthèse : La conservation du patrimoine culturel indigène : essai critique avec des idées pour le futur]

Loriene Roy

IFLA Journal, 41-3, 192-203

Cette analyse critique présente le domaine de la conservation du patrimoine culturel indigène au sein des bibliothèques comme une discipline qui offre encore un grand potentiel d'exploration et de réalisations. Cependant, c'est encore aussi un domaine sensible et potentiellement dommageable pour les communautés culturelles qui ont confié leurs trésors vivants à ces institutions. Les possibilités de faire la différence sont nombreuses, mais il leur faut peut-être évoluer en modifiant les attitudes et approches générationnelles.

The digital library in the re-inscription of African cultural heritage

[La bibliothèque numérique dans le réenregistrement du patrimoine culturel africain]

Dale Peters, Matthias Brenzinger, Renate Meyer, Mandy Noble, Niklas Zimmer

IFLA Journal, 41-3, 204-210

Les bibliothèques numériques africaines ont évolué au-delà du débat « conservation ou accès » des années 1990 et de la tendance concomitante à convertir systématiquement (ou non) les collections analogues du patrimoine culturel en formats numériques. Le défi consiste maintenant à faire preuve de flexibilité pour satisfaire les besoins des utilisateurs, afin de répondre au choix de la numérisation avec une approche plus stratégique concernant la pertinence et les résultats potentiels de la recherche. Cet article examine la relation symbiotique entre conservation, patrimoine culturel et érudition dans une étude de cas sur la description et la documentation des langues mortes africaines. Il suggère de mettre maintenant l'accent sur l'érudition numérique, pour permettre tout à la fois une innovation technologique et un plus grand engagement intellectuel dans le réexamen de la bibliothèque numérique, afin de réviser, corriger et augmenter les documents éphémères par le biais d'une nouvelle interprétation savante du patrimoine culturel africain.

Storing and Sharing Wisdom and Traditional Knowledge in the Library

[Conserver et partager sagesse et savoir traditionnel au sein des bibliothèques]

Jenny Bossaller, Brooke Shannon

IFLA Journal, 41-3, 211-222

La pratique bibliothécaire traditionnelle est axée sur les collections imprimées et sur le développement de collections de matériaux ayant été publiés, ce qui

signifie que les documents ont été soumis à une certaine forme d'examen ou de procédure de contrôle. Cette pratique exclut de la collection un vaste éventail de connaissances potentielles, notamment savoir, croyances et expérience indigènes. Les « bibliothèques humaines » et autres collections non imprimées représentent des formes de savoir moins traditionnelles. Cet article évoque la relation entre sagesse et savoir telle qu'elle se manifeste dans une étude des pratiques quotidiennes d'information de femmes universitaires kenyanes. Ces femmes ont photographié chaque jour des événements de leur vie et décrit ce qu'elles voyaient. Une des constatations a été la présentation différente de la sagesse et du savoir. Les femmes les décrivant par rapport à leur éducation, cela démontre selon nous qu'il est nécessaire de reconsidérer les hypothèses positivistes de la bibliothéconomie, en tenant également compte de ce que les femmes appellent « sagesse ». Cependant, comment conserver et partager la sagesse ?

The challenges of reconstructing cultural heritage: An international digital collaboration

[Les défis de la reconstruction d'un patrimoine culturel : une collaboration numérique internationale]

Rachel Heuberger, Laura E. Leone, Renate Evers

IFLA Journal, 41-3, 223-229

La numérisation de la collection Freimann, composée d'œuvres uniques appartenant à la Wissenschaft des Judentums (Science du Judaïsme), était une initiative internationale en collaboration pour reconstruire virtuellement une collection du patrimoine culturel juif en partie perdue pendant la Seconde Guerre mondiale. Ces œuvres comprennent les premières études de textes religieux juifs pré-modernes utilisant des méthodes de recherche académique. En se basant sur un catalogue publié avant la guerre, le projet a rassemblé des vestiges de la collection bibliothécaire existant à l'origine en Allemagne et des collections recueillies dans l'un des principaux lieux d'exil des Juifs allemands aux États-Unis. Les textes en libre accès permettent de renforcer l'érudition en permettant à une audience illimitée une découverte sur le long terme. La numérisation et la reconstruction virtuelle sont non seulement cruciales du point de vue de la conservation numérique, elles permettent aussi aux chercheurs d'appréhender les œuvres dans le contexte de leur signification intellectuelle et historique. Le projet génère également des modèles de collaboration internationale et des travaux de numérisation à grande échelle.

Born fi dead? Special collections and born digital heritage, Jamaica

[Born fi dead ? La Jamaïque : collections spéciales et patrimoine d'origine numérique]

Cherry-Ann Smart

IFLA Journal, 41-3, 230-236

Les documents imprimés du patrimoine culturel rassemblés dans des collections spéciales occupent une position particulière au sein des bibliothèques. Cependant, leur potentiel en matière de pédagogie et d'apprentissage demeure souvent sous-exploité, en raison de problèmes de conservation. Ces problèmes renforcent leur caractère exclusif, une perception qui peut avoir un impact sur les relations avec les donateurs et empêcher inconsciemment l'accès à des fins de recherche. Inversement, la publication électronique a amélioré l'accès aux produits en format numérique du patrimoine culturel d'érudits et de créateurs. Sans avoir à se soucier de passer par des intermédiaires, ces producteurs de contenu d'origine numérique représentent un « nouvel ordre mondial » pour les bibliothèques chargées de la double responsabilité de l'accès et de la postérité. Certains défis ont un caractère infrastructurel, par exemple la pénétration d'Internet, d'autres un caractère humain découlant de la nécessité de renforcer les capacités dans des domaines tels que stratégies efficaces de publication et de conservation. Ces compétences sont essentielles pour bien comprendre le potentiel de perte de produits du patrimoine culturel et le besoin de mécanismes viables pour gérer le contenu ; se contenter de moins suggérerait que les produits du patrimoine culturel sont littéralement « born fi dead », à savoir : nés pour mourir.

Digitization of Indian Manuscripts Heritage: Role of National Mission for Manuscripts

[Numérisation du patrimoine de manuscrits indiens : le rôle de la Mission nationale chargée des manuscrits]

Jyotshna Sahoo, Basudev Mohanty

IFLA Journal, 41-3, 237-250

L'Inde a la particularité de posséder les collections de manuscrits les plus anciennes, les plus riches et les plus étendues du monde. Ces manuscrits jouent un rôle important dans la conservation du patrimoine culturel indien sous des formes, langages, écritures et sujets différents. Mais la conservation de ces manuscrits pose un sérieux problème aux conservateurs en raison des conditions climatiques chaudes et humides du pays. Dans ce contexte, le présent article rend compte des efforts louables faits par la Mission nationale chargée

des manuscrits (National Mission for Manuscripts, NMM) depuis sa mise en place en 2003, avec la création et la consolidation de 57 centres de ressources pour les manuscrits et de 50 centres de conservation des manuscrits, ainsi que le développement d'une base de données nationale de manuscrits. Il présente aussi l'état actuel de la numérisation du patrimoine culturel indien sous forme de manuscrits, depuis leur recueil jusqu'au développement d'une bibliothèque numérique de manuscrits accessible à tous.

Preserving digital heritage: At the crossroads of Trust and Linked Open Data

[Conservation du patrimoine numérique : à la croisée des chemins entre Données de confiance et Linked Open Data]

Iryna Solodovnik, Paolo Budroni

IFLA Journal, 41-3, 251-264

Quelles que soient les technologies actuelles ou futures, l'accès aux ressources d'information conservées en format numérique constituera toujours un défi. Il existe une pléthore de modèles, normes et pratiques d'excellence traitant des différentes facettes de la conservation des objets numériques. La gestion des objets numériques nécessite des politiques et des plans de gestion bien définis, qui englobent toutes les procédures concernant leur cycle de vie spécifique. Pour atteindre de hauts niveaux de partage des données et permettre une réutilisation des données sur le long terme, APARSEN recommande de mettre en place une Structure interopérable pour les codes permanents (Interoperable Framework for Persistent Identifiers), ouvrant ainsi la voie à un « cercle de codes permanents fiables pour Linked Open Data ». Pour permettre l'interopérabilité sémantique de ce cercle, cet article propose de recenser les métadonnées LOD-BD avec l'ontologie de la Structure interopérable. Le cercle peut être complété par l'ensemble d'outils technologiques de LOD2, pour s'attaquer au problème de la fiabilité du cycle de vie des données liées tout en tenant compte de celui des Big Data. Pour inspirer confiance, les bibliothèques numériques doivent être contrôlées et certifiées en conformité avec le cadre européen d'audit et de certification des archives numériques.

The Universal Procedure for Library Assessment: A statistical model for condition surveys of special collections in libraries

[Procédure universelle d'évaluation des bibliothèques : un modèle statistique pour étudier l'état des collections spéciales des bibliothèques]

Sam Capiou, Marijn de Valk, Eva Wuyts

IFLA Journal, 41-3, 265-271

Pour assurer la protection des besoins en conservation et préservation des collections spéciales des bibliothèques, la Fondation des Bibliothèques du Patrimoine flamand a conçu une Procédure universelle d'évaluation bibliothécaire (Universal Procedure for Library Assessment ou UPLA), un modèle permettant d'évaluer les dommages. Ce modèle consiste en une évaluation statistique des dommages subis par les collections bibliothécaires. Il détermine l'étendue des dommages et l'accessibilité des documents bibliothécaires. Il peut être mis en œuvre par le propre personnel des bibliothèques ayant suivi une formation de base. Cela permet de rassembler et d'affermir les connaissances au sein de l'organisation à propos des soins à apporter à la collection de matériaux bibliothécaires pendant toute la procédure UPLA. Les statistiques réunies lors du contrôle servent de base pour développer une politique de conservation et un programme d'entretien de la collection. Elles peuvent aussi être comparées à des données rassemblées par d'autres institutions. La Fondation des Bibliothèques du Patrimoine flamand rassemble six bibliothèques patrimoniales de la Région flamande (dans le nord de la Belgique). La Fondation a conçu la procédure universelle d'évaluation UPLA en 2013-2014.

Cultural Heritage digitization projects in Algeria case study of the National Library

[Projets de numérisation du patrimoine culturel en Algérie: une étude de cas de la Bibliothèque nationale]

Meriem Boulahlib, Nadjia Ghamouh

IFLA Journal, 41-3, 272-278

La Bibliothèque nationale algérienne s'emploie actuellement à numériser le patrimoine culturel algérien. Cet exercice est devenu impératif en raison des dégâts physiques causés par la manipulation des manuscrits pendant leur lecture. Cette étude de cas vise à faire la lumière sur les défis de la numérisation des manuscrits et des livres rares dans le contexte algérien. En outre, cet article présente les aspirations et projets de la Bibliothèque nationale pour assurer la réussite de cette tentative de numérisation des manuscrits et des livres rares.

Zusammenfassungen

Review Article: Indigenous cultural heritage preservation: A review essay with ideas for the future

Übersichtsartikel: Erhaltung des einheimischen Kulturerbes: eine Betrachtung der Ideen für die Zukunft

Loriene Roy

IFLA Journal, 41-3, 192-203

Diese Literaturstudie zeigt die Wirkung durch die Erhaltung des einheimischen Kulturerbes in Bibliotheken als einen Bereich, der noch weitere bedeutungsvolle Erkundungen und Leistungen bieten dürfte. Dieses Themengebiet ist für die örtlichen Gemeinschaften jedoch ein sehr sensibler Punkt mit möglicherweise schädlichen Folgen, weil sie diesen Einrichtungen ihre lebenden Schätze überlassen haben. Es bieten sich unzählige Möglichkeiten, Dinge zu bewegen, aber sie müssen sich durch den Wandel bei dem Verhalten und der Vorgehensweise bei Generationen entwickeln.

The digital library in the re-inscription of African cultural heritage

Die digitale Bibliothek in der Neuerfassung des afrikanischen Kulturerbes

Dale Peters, Matthias Brenzinger, Renate Meyer, Mandy Noble, Niklas Zimmer

IFLA Journal, 41-3, 204-210

Afrikanische Bibliotheken haben sich seit der Debatte „Erhaltung oder Zugriff“ in den 1990-er Jahren weiterentwickelt, während gleichzeitig die (un-)systematische Umstellung der Kollektionen des Kulturerbes von analogen in digitale Formate verlaufen ist. Die Herausforderung heute besteht daraus, sich flexibel auf die Bedürfnisse der Benutzer umzustellen, damit die Auswahl für die Digitalisierung auf strategische Weise dem Stellenwert für die Forschung sowie den möglichen Forschungsergebnissen gerecht wird. In diesem Dokument wird in einer Fallstudie über die Beschreibung und Dokumentation ausgestorbener afrikanischer Sprachen die symbiotische Beziehung zwischen Erhaltung, Kulturerbe und Lehre in einem Fallbeispiel untersucht. Es zeigt auf, dass der neue Schwerpunkt in der digitalen Lehre liegt, durch die eine neue gelehrte Interpretation des afrikanischen Kulturerbes sowohl technische Innovationen als auch

ein verstärktes intellektuelles Engagement in einem neuerlichen Besuch der digitalen Bücherei zur Prüfung, Berichtigung und Aufnahme transitorischer Aufzeichnungen ermöglicht.

Storing and Sharing Wisdom and Traditional Knowledge in the Library

Archivierung und Austausch von Weisheit und traditionellem Wissen in der Bücherei

Jenny Bossaller, Brooke Shannon

IFLA Journal, 41-3, 211-222

In einer traditionellen Bibliothek dreht sich alles einerseits um gedruckte Sammlungen und andererseits um die Erstellung von Sammlungen aus veröffentlichten Materialien; das bedeutet, dass die Dokumente einer Art von Prüfung beziehungsweise Untersuchung unterzogen wurden. In der Praxis bietet sich noch ein weites Feld möglichen Wissens außerhalb solcher Sammlungen wie indigene Kenntnisse, Überzeugungen und Erfahrungen. Menschliche Büchereien und andere nicht gedruckte Sammlungen stehen für weniger traditionelle Formen des Wissens. Dieses Dokument skizziert das Verhältnis zwischen Weisheit und Wissen, und beruht auf einer Studie über den alltäglichen Umgang kenianischer Akademikerinnen mit Informationen. Die Frauen fotografierten Aspekte aus ihrem Alltag und beschrieben, was sie sahen. Ein sich daraus ergebendes Ergebnis war die unterschiedliche Darstellung von Weisheit und Wissen. Da die Frauen dies in Bezug zu ihrer eigenen Ausbildung beschrieben, gehen wir davon aus, dass dies ein Bedürfnis zur Neubewertung positivistischer Annahmen in der Bibliothekswissenschaft zeigt, die - wie die Frauen das nannten - die Weisheit in die Regale bringt. Wie allerdings lässt sich Weisheit sichern und teilen?

The challenges of reconstructing cultural heritage: An international digital collaboration

Die Herausforderungen bei der Wiederherstellung von Kulturerbe: eine internationale digitale Zusammenarbeit

Rachel Heuberger, Laura E. Leone, Renate Evers

IFLA Journal, 41-3, 223-229

Die Digitalisierung der Freimann-Kollektion, die einzigartige Werke aus der Wissenschaft des Judentums umfasst, beruht auf einer gemeinsamen internationalen Initiative zur virtuellen Wiederherstellung einer

Kollektion jüdischen Kulturerbes, die im Zweiten Weltkrieg dezimiert wurde. Diese Werke umfassten die ersten Kontakte mit prä-modernen, jüdisch-religiösen Texten, für die moderne Forschungsmethoden der akademischen Welt eingesetzt wurden. Auf der Grundlage eines vor dem Zweiten Weltkrieg veröffentlichten Katalogs führte das Projekt Reste der ursprünglichen Bibliothekssammlung aus Deutschland und Kollektionen zusammen, die sich an einem der wichtigsten Orte der deutschsprachigen Juden im US-amerikanischen Exil befinden. Die frei zugänglichen Texte gewährleisteten Verbesserungen in der Lehre, indem sie einem unbegrenzten Publikum langfristige Entdeckungen ermöglichen. Die Digitalisierung und die virtuelle Rekonstruktion sind nicht nur aus dem Gesichtspunkt der digitalen Erhaltung von wesentlicher Bedeutung, denn sie erlauben es Forschenden zudem, die Werke im Kontext ihrer geistigen und historischen Bedeutung darzustellen. Das Projekt führte darüber hinaus zu Modellen für die internationale Zusammenarbeit und umfassenden Arbeitsabläufen bei der Digitalisierung.

Born fi dead? Special collections and born digital heritage, Jamaica

Born Fi' Dead? Besondere Sammlungen und geschaffenes digitales Erbe, Jamaica

Cherry-Ann Smart

IFLA Journal, 41-3, 230-236

Gedruckte Werke des Kulturerbes in besonderen Sammlungen nehmen einen besonderen Stellenwert in Bibliotheken ein, aber deren Potenzial für Schulung und Ausbildung wird aufgrund von Fragen über deren Erhaltung oftmals nur unzureichend ausgeschöpft. Diese Herausforderungen unterstreichen ihre Exklusivität, eine Wahrnehmung also, die sich auf die Beziehungen mit Spendern auswirken und unterschwellig den Zugriff für die Forschungstätigkeit beeinträchtigen kann. Im Gegensatz dazu bieten elektronische Veröffentlichungen für Gelehrte und kreative Expressionisten den Zugriff auf geschaffene Produkte des Kulturerbes. Ohne Behinderungen durch Zwischenpersonen stellen diese Schaffenden digitaler Werke eine neue Weltordnung für Bibliotheken dar, für die sich die doppelte Verantwortung zu Zugriff und Nachwelt stellt. Manchen Herausforderungen wie die Internetdurchdringung haben einen infrastrukturellen Charakter, während andere sich auf Menschen beziehen, und auf dem Bedürfnis beruhen, in den Bereichen Publikation und effektive Erhaltung neue Kapazitäten aufzubauen. Diese Fertigkeiten sind für

die Konzeptualisierung des Potenzials der verloren gegangenen Produkte des Kulturerbes und den Bedarf nach zukunftssicheren Mechanismen für die Verwaltung von Content von ausschlaggebender Bedeutung, denn alles andere würde bedeuten, dass Exemplare des Kulturerbes ganz buchstäblich „Born Fi' Dead“ (nach dem gleichnamigen Buchtitel des Romans von Laurie Gunst über Ghettos in Jamaica: zum Sterben geboren) seien.

Digitization of Indian Manuscripts Heritage: Role of National Mission for Manuscripts

Digitalisierung des Erbes indische Manuskripte: die Rolle der nationalen Mission für Manuskripte

Jyotshna Sahoo, Basudev Mohanty

IFLA Journal, 41-3, 237-250

Indien zeichnet sich dadurch aus, dass das Land über eine der weltweit ältesten, umfassendsten und größten Sammlungen von Manuskripten verfügt. Diese Manuskripte in unterschiedlichen Formen, Sprachen, Skripten und Themen sind ein wertvolles Hilfsmittel für die Erhaltung des indischen Kulturerbes, aber die Erhaltung dieser Manuskripte stellt durch das heiße und schwüle Klima im Land ein schwerwiegendes Problem für die Hüter dieser Dokumente dar. In diesem Kontext zeigt das vorliegende Dokument auf, welche Anstrengungen die Nationale Mission für Manuskripte (National Mission for Manuscripts, NMM) seit ihrer Gründung 2003 durch die Einrichtung und Förderung von 57 Forschungszentren für Manuskripte (Manuscript Resource Centers, MRC), von 50 Konservierungszentren für Manuskripte (Manuscript Conservation Centers, MCC) sowie durch die Erstellung einer Nationalen Datenbank für Manuskripte erbracht hat. Dadurch wird zudem der derzeitige Stand bei der Digitalisierung des indischen Kulturerbes in der Form von Manuskripten ab deren Sammlung bis hin zum Aufbau einer Digitalen Manuskriptbibliothek (Digital Manuscript Library, DML) für einen globalen Zugriff aufgezeigt.

Preserving digital heritage: At the crossroads of Trust and Linked Open Data

Erhaltung des digitalen Erbes: am Schnittpunkt von Vertrauen und verbundenen offenen Daten

Iryna Solodovnik, Paolo Budroni

IFLA Journal, 41-3, 251-264

Ungeachtet der heutigen oder künftigen Technologien stellt der Zugriff auf digital erhaltene Informationsquellen

immer gewisse Herausforderungen. Es gibt eine Fülle an Modellen, Normen und bewährten Methoden für die verschiedenen Aspekte bei der Erhaltung digitaler Objekte. Die Verwaltung digitaler Objekte erfordert sorgfältig durchdachte Vorgaben und Pläne zum Datenmanagement, die sämtliche Prozesse im Rahmen ihres eigenen Lebenszyklus umfassen. Um möglichst optimale Leistungen beim Austausch von Daten und deren langfristige Wiederverwertung zu gewährleisten, empfiehlt APARSEN die Erarbeitung eines vollständig kompatiblen Rahmens für dauerhafte Identifikatoren, die den Weg zu einem „Ring verlässlicher dauerhafter Identifikatoren für verbundene offene Daten“ ebnen. Zur Ermöglichung der semantischen Interoperabilität in einem solchen Ring schlägt dieser Artikel die Erfassung der Metadaten LOD2-BD in der Seinslehre des Rahmens vor. Der Ring kann durch die LOD2 Technologie Stack weiter verstärkt werden, sodass das Problem der Verlässlichkeit in Bezug auf den Lebenszyklus der verbundenen Daten beseitigt wird, während man sich gleichzeitig der Frage der Big Data stellt. Für die Zuverlässigkeit müssen digitale Bibliotheken nach dem europäischen Rahmen für Prüfung und Zertifizierung geprüft und zertifiziert werden.

The Universal Procedure for Library Assessment: A statistical model for condition surveys of special collections in libraries

Das universelle Verfahren für den Zugriff auf Bibliotheken: ein statistisches Modell für Zustandserhebungen der besonderen Kollektionen von Bibliotheken

Sam Capiiau, Marijn de Valk, Eva Wuyts

IFLA Journal, 41-3, 265-271

Zum Schutz der Bedürfnisse für die Erhaltung und Konservierung besonderer Kollektionen in Bibliotheken hat die Bibliothek des flämischen Kulturerbes das universelle Verfahren zur Bibliotheksbewertung (Universal Procedure for Library Assessment, UPLA) als Modell für die Bewertung von Schäden erarbeitet. Dieses Modell beschreibt die Beschädigungen von

Bibliothekssammlungen anhand statistischer Angaben, die sowohl den Umfang des Schadens als auch die Zugänglichkeit der Bibliotheksmaterialien aufzeigen. Das Modell lässt sich nach einem absolvierten Grundkurs von den Angestellten der Bibliothek selbst implementieren. Dadurch wird gewährleistet, dass durch die UPLA-Bewertung das Wissen über die Pflege einer Sammlung in Bibliotheken zusammengetragen und in der Organisation konsolidiert wird. Die durch die Bewertung erfassten Daten sind dann die Bausteine für die Entwicklung einer Verhaltensweise zur Erhaltung und eines Programms zur Pflege der Sammlung. Diese Daten lassen sich zudem mit den gesammelten Angaben anderer Einrichtungen vergleichen.

Die Bibliothek des flämischen Kulturerbes ist ein Netzwerkverband, der aus sechs Bibliotheken für das Kulturerbe in Flandern (dem Nordteil von Belgien) besteht. In den Jahren 2013 und 2014 hat die Bibliothek des flämischen Kulturerbes das universelle Verfahren für den Zugriff auf Bibliotheken (UPLA) erarbeitet.

Cultural Heritage digitization projects in Algeria case study of the National Library

Projekte zur Digitalisierung des Kulturerbes in Algerien - Fallbeispiel in der Nationalbibliothek

Meriem Boulahlib, Nadjia Ghamouh

IFLA Journal, 41-3, 272-278

Die algerische Nationalbibliothek arbeitet zurzeit an der Digitalisierung des algerischen Kulturerbes. Diese Bemühungen erwiesen sich durch physische Schäden an Manuskripten bei deren Lektüre erforderlich. Dieses Fallbeispiel zielt darauf ab, weitere Informationen über die Herausforderungen zu erhalten, die sich bei der Digitalisierung von Manuskripten und seltenen Büchern im Kontext Algeriens ergeben. Darüber hinaus beschreibt dieses Dokument die Zielsetzungen und Pläne der Nationalbibliothek, damit die Digitalisierung seltener Bücher zu einer erfolgreichen Unternehmung wird.

Рефераты статей

Review Article: Indigenous cultural heritage preservation: A review essay with ideas for the future

Обзорная статья: Сохранение культурного наследия коренного населения: Обзорное эссе, содержащее идеи относительно будущего

Лорин Рой

IFLA Journal, 41-3, 192-203

В данном литературном обзоре мир культурного наследия коренного населения в библиотеках предстает как сфера, которая все еще готова к предметному изучению и новым достижениям. При этом данная сфера по-прежнему остается уязвимой и потенциально губительной для тех культурных сообществ, которые верили этим учреждениям свои живые сокровища. Существует масса способов изменить ситуацию к лучшему, но они должны стать результатом изменения точек зрения и подходов поколений.

The digital library in the re-inscription of African cultural heritage

Электронная библиотека в новом подходе к документированию культурного наследия Африки

Дейл Питерс, Маттиас Бренцингер, Рената Мейер, Менди Ноубл, Никлас Циммер

IFLA Journal, 41-3, 204-210

Электронные библиотеки Африки переросли дебаты 1990-х о том, как поступать: “сохранять, либо предоставлять доступ”, а также сопутствующий порыв (не)систематического преобразования собраний, являющихся культурным наследием, из аналогового в цифровой формат. Сейчас главной задачей является способность оперативно реагировать на потребности пользователя, сочетать выбор в пользу цифрового формата с более стратегически продуманным подходом в части актуальности проводимых исследований и их потенциальных результатов. В данной работе рассматривается симбиотическая взаимосвязь между сохранением, феноменом культурного наследия и образованием в рамках анализа практического описания и документирования исчезающих языков Африки. Главная идея настоящего документа

заключается в том, что в текущих условиях основное внимание необходимо уделять обучению в цифровом формате, предоставляя возможность при повторяющемся обращении в электронную библиотеку с использованием как технических новшеств, так и более интеллектуальных средств, производить обзор, исправление и дополнение записей, не имеющих статуса завершенных, согласно новой научной интерпретации культурного наследия Африки.

Storing and Sharing Wisdom and Traditional Knowledge in the Library

Сохранить и поделиться мудростью и традиционными знаниями в библиотеке

Дженни Боссаллер, Брук Шеннон

IFLA Journal, 41-3, 211-222

Согласно традиционному подходу, библиотеки фокусируют свое внимание на собрании печатных материалов и создании фондов из материалов, которые были напечатаны, и это означает, что документы в той или иной степени были подвергнуты изучению и анализу. При таком подходе из фондов ‘выкашивается’ существенный объем потенциальных знаний, таких как знания коренных народов, поверья и жизненный опыт. “Живые библиотеки” и прочие некоммерческие собрания представляют менее традиционные формы знаний. В настоящей работе очерчено взаимоотношение между мудростью и знаниями, возникшее в ходе изучения информационного опыта женщин университета Кении. Они фотографировали события своей повседневной жизни и описывали то, что видели. Одним из результатов было обнаружение различия в изложении мудрости и знаний. Поскольку женщины представляли свои описания во взаимосвязи с собственным образованием, мы утверждаем, что данный факт указывает на необходимость пересмотра позитивистских предположений в библиотековедении и размещения на стеллажах того, что женщины назвали мудростью. Правда, как можно хранить мудрость и делиться ею?

The challenges of reconstructing cultural heritage: An international digital collaboration

Трудноразрешимые вопросы восстановления культурного наследия: Международное

сотрудничество в области цифровых технологий

Рашель Хойбергер, Лаура Е. Леоне, Рената Эверс

IFLA Journal, 41-3, 223-229

Перевод в электронный формат Коллекции Фраймана, уникальных работ, относящихся к Академическому исследованию иудаизма [Wissenschaft des Judentums], был совместной международной инициативой, направленной на восстановление в виртуальном формате коллекции еврейского культурного наследия, которая пострадала во время Второй мировой войны. Данные работы включали в себя первое обращение к досовременным еврейским религиозным текстам с использованием современных методов исследования, принятых в научном сообществе. Начавшись с напечатанного в довоенное время каталога, проект собрал воедино остатки оригинальной библиотеки в Германии, а также коллекции, которые были собраны в одном из главных мест пребывания изгнанных немецкоязычных евреев в Соединенных Штатах. Нахождение текстов в свободном доступе обеспечивает расширение возможностей образования, поскольку таким образом неограниченному количеству читателей предоставляется доступ к сведениям, значение которых имеет долговременный характер. Преобразование в электронный формат и виртуальная реконструкция не только имеют чрезвычайно важное значение с точки зрения сохранения материалов в цифровом формате, но также позволяют исследователям представить эти работы в контексте их интеллектуальной и исторической значимости. Также в ходе данного проекта были сформированы модели международного сотрудничества и организации рабочего процесса в рамках масштабных проектов по преобразованию материалов в электронный формат.

Born fi dead? Special collections and born digital heritage, Jamaica

Рождены, чтобы умереть? Специальные собрания и местное культурное наследие, Ямайка

Черри-Энн Сمارт

IFLA Journal, 41-3, 230-236

Особое место в библиотеках занимают специальные собрания печатных образцов культурного наследия. При этом их потенциал с точки зрения педагогики и обучения зачастую может быть

недостаточно изучен вследствие влияния факторов, связанных с обеспечением сохранности. Данные факторы особо подчеркивают исключительность подобных предметов, и такое восприятие может отразиться на взаимоотношениях с дарителями и неумышленно затруднить доступ для проведения научно-исследовательской работы. С другой стороны, публикация в электронном виде расширила доступ членов научного сообщества и творческих личностей к представленному в цифровом формате местному культурному наследию. При отсутствии препятствий в лице посредников данные местные производители цифровой продукции представляют “новый мировой порядок” для библиотек, на которых лежит двойная ответственность: обеспечить доступ к материалам и сохранить их для последующих поколений. Некоторые из насущных проблем являются инфраструктурными, как, например, проникновение Интернета, другие связаны с человеческим фактором и возникают в связи с наращиванием потенциала в таких сферах, как публицистика и эффективные стратегии обеспечения сохранности. Данные навыки имеют первостепенное значение для полного осмысления возможности потери предметов культурного наследия, а также потребности в жизнеспособных механизмах управления содержанием; что-либо менее масштабное дало бы основание предположить, что предметы культурного наследия в буквальном смысле “рождены, чтобы умереть”.

Digitization of Indian Manuscripts Heritage: Role of National Mission for Manuscripts

Преобразование в цифровой формат рукописного наследия Индии: Роль Национальной миссии по вопросам рукописей

Юотшна Саху, Басудев Моханти

IFLA Journal, 41-3, 237-250

Отличительной чертой Индии является наличие одного из древнейших, богатейших и крупнейших собраний рукописей в мире. Данные рукописи являются действенным средством сохранения культурного наследия Индии в многообразии форм, языков, рукописных шрифтов и предметов. Однако сохранение рукописей является серьезной проблемой для их хранителей в связи с жарким и влажным климатом в стране. В данном контексте в настоящей работе представлен отчет о достойных похвалы усилиях, предпринятых Национальной миссией по вопросам рукописей (NMM) с момента ее основания в 2003 году, вызвавшихся в

учреждении и укреплении 57-ми Ресурсных центров рукописей (MRC), 50-ти Центров сохранения рукописей (MCC), а также в разработке Национальной базы рукописей. В работе также представлено текущее состояние процесса преобразования в цифровой формат рукописного наследия Индии в виде пути рукописи с момента ее получения до момента создания Электронной библиотеки рукописей (DML), открытой для всемирного доступа.

Preserving digital heritage: At the crossroads of Trust and Linked Open Data

Сохранение электронного наследия: На пересечении путей доверия и связанных открытых данных

Ирина Солодовник, Паоло Будрони

IFLA Journal, 41-3, 251-264

Независимо от современных или будущих технологий, подключение к сохраняемым в цифровом формате информационным ресурсам всегда будет источником сложных задач. Существует огромное количество моделей, стандартов и проверенных практических методов в различных областях сохранения Цифровых объектов. Управление Цифровыми объектами требует наличия четко определенной Политики и Планов управления данными, которые включают в себя все процессы, связанные с их конкретным жизненным циклом. Для достижения высокого уровня обмена данными и повторного использования данных в долгосрочной перспективе APARSEN (Сетевой альянс постоянного доступа к научным данным в Европе) рекомендует разработку функционально совместимой среды постоянных идентификаторов, прокладывающей путь для “Кольца доверительных постоянных идентификаторов для связанных открытых данных”. С целью обеспечения семантического взаимодействия такого Кольца в настоящей работе предлагается сопоставлять метаданные LOD-BD с онтологией среды. Кольцо впоследствии может быть дополнено стеком технологии LOD2 для работы над решением проблемы достоверности жизненного цикла Связанных данных, при этом необходимо будет поработать над вопросом Больших данных. Для того, чтобы рассчитывать на доверие пользователей, электронные библиотеки должны пройти аудит и быть сертифицированы в соответствии с Европейскими критериями проведения аудита и сертификации.

The Universal Procedure for Library Assessment: A statistical model for condition surveys of special collections in libraries

Единая процедура оценки библиотеки: Статистическая модель для обследования состояния специальных фондов библиотек

Сам Капиау, Марейн де Валк, Эва Вьютс

IFLA Journal, 41-3, 265-271

Для обеспечения потребности в консервировании и сохранении специальных коллекций в библиотеках организация Библиотека наследия Фландрии разработала Единую процедуру оценки библиотеки (UPLA), которая представляет собой модель оценки причиненного ущерба. Данная модель описывает статистическую оценку ущерба, причиненного фондам библиотеки. Она позволяет определить размер ущерба, а также степень доступности материалов библиотеки. Данную модель можно реализовать силами собственного персонала библиотеки после завершения базового обучения. Проведение оценки согласно процедуре UPLA позволяет накапливать и подкреплять в рамках организации знания о мерах по обеспечению сохранности материалов библиотеки. Статистические данные, полученные в ходе оценки, являются структурными элементами развития стратегии консервирования материалов, а также программы обеспечения сохранности фондов. Также их можно сравнивать с данными, полученными другими учреждениями.

Библиотека наследия Фландрии является сетевой организацией, включающей в себя шесть библиотек наследия на территории Фландрии (северная часть Бельгии). В 2013-2014 годах Библиотека наследия Фландрии разработала Единую процедуру оценки библиотеки (UPLA).

Cultural Heritage digitization projects in Algeria case study of the National Library

Проекты по переводу культурного наследия в электронный формат в Алжире, практическое исследование на примере Национальной библиотеки

Меризм Боулахлиб, Надия Гхамоу

IFLA Journal, 41-3, 272-278

В текущий момент Национальная библиотека Алжира прилагает большие усилия, чтобы перевести в электронный формат культурное наследие

Алжира. Данная процедура приобрела статус неотложной задачи вследствие причинения физического ущерба рукописям при обращении с ними в процессе чтения. Задачей настоящего практического исследования является пролить свет на главные трудности, связанные с переводом в

цифровую форму рукописей и редких книг, в контексте Алжира. В данной работе также дается объяснение стремлениям и планам национальной библиотеки, направленным на превращение процесса оцифровывания рукописей и редких книг в процветающее начинание.

Resúmenes

Review Article: Indigenous cultural heritage preservation: A review essay with ideas for the future

Artículo de revisión: Conservación del patrimonio cultural indígena: un artículo de revisión con ideas para el futuro

Loriene Roy

IFLA Journal, 41-3, 192-203

Esta reseña literaria muestra el ámbito de la conservación del patrimonio cultural indígena en las bibliotecas como área ya madura para realizar una exploración significativa y obtener logros importantes. Sin embargo, este campo todavía es sensible y potencialmente nocivo para las comunidades culturales que han confiado sus tesoros vivos a estas instituciones. Está repleto de oportunidades para marcar la diferencia, pero puede que sea necesario modificar las actitudes y los planteamientos generacionales.

The digital library in the re-inscription of African cultural heritage

La biblioteca digital en la reinscripción del patrimonio cultural africano

Dale Peters, Matthias Brenzinger, Renate Meyer, Mandy Noble, Niklas Zimmer

IFLA Journal, 41-3, 204-210

Las bibliotecas digitales africanas han evolucionado más allá del debate "conservación o acceso" de 1990, y el consiguiente apremio por convertir las colecciones del patrimonio cultural del formato analógico al digital de forma (poco) sistemática. Ahora el desafío recae sobre la agilidad para responder a las necesidades de los usuarios, para combinar la selección a digitalizar con un enfoque más estratégico de la relevancia de la investigación y los posibles resultados de la misma. Este documento analizará la relación simbiótica entre

conservación, patrimonio cultural e investigación en un caso práctico sobre la descripción y la documentación de los idiomas africanos extinguidos. Propone que el nuevo punto de interés recaiga en la investigación digital, permitiendo tanto la innovación técnica como un compromiso más intelectual a la hora de revisar la biblioteca digital, corregirla y aumentar los registros transitorios mediante una nueva interpretación académica del patrimonio cultural africano.

Storing and Sharing Wisdom and Traditional Knowledge in the Library

Almacenar y compartir sabiduría y conocimientos tradicionales en la biblioteca

Jenny Bossaller, Brooke Shannon

IFLA Journal, 41-3, 211-222

La práctica bibliotecaria tradicional se centra en colecciones impresas y en el desarrollo de colecciones de materiales que se han publicado, lo que significa que los documentos se han sometido a algún proceso de revisión o selección. Esta práctica deja fuera de la colección gran cantidad de conocimientos potenciales, como por ejemplo los conocimientos, las creencias y las experiencias indígenas. Las bibliotecas humanas y otras colecciones no impresas representan formas menos tradicionales del conocimiento. Este documento define la relación entre la sabiduría y el conocimiento que surgió al estudiar las prácticas de información del día a día en las universitarias kenianas. Las mujeres fotografiaron acontecimientos cotidianos de su vida y describieron lo que veían. Uno de los resultados fue la divergente presentación de sabiduría y conocimientos. Dado que las mujeres los describieron en relación con su educación, constatamos que esto demuestra la necesidad de reconsiderar suposiciones positivistas en biblioteconomía, llevando a las estanterías lo que las mujeres llamaban sabiduría. Entonces, ¿cómo se puede almacenar y compartir la sabiduría?

**The challenges of reconstructing cultural heritage:
An international digital collaboration**

**Los desafíos de reconstruir un patrimonio cultural:
una colaboración digital internacional**

Rachel Heuberger, Laura E. Leone, Renate Evers

IFLA Journal, 41-3, 223-229

La digitalización de la colección Freimann, obras únicas que pertenecen al Wissenschaft des Judentums [Estudios Judaicos], fue una iniciativa de colaboración internacional para reconstruir prácticamente una colección del patrimonio cultural judío que sufrió pérdidas durante la Segunda Guerra Mundial. Estas obras incluían el primer acercamiento a textos religiosos judíos premodernos usando métodos de investigación modernos del entorno académico. Partiendo de un catálogo publicado antes de la guerra, el proyecto reunió los restos de la colección original de la biblioteca en Alemania y colecciones que se recopilaron en uno de los principales lugares de exilio de los judíos de habla alemana en los Estados Unidos. Los textos de acceso gratuito garantizan la mejora de la investigación, ya que ofrecen descubrimiento a largo plazo a una audiencia ilimitada. La digitalización y la reconstrucción virtual no solo son cruciales desde el punto de vista de la conservación digital, sino que además permiten a los investigadores visualizar los trabajos en el contexto de su importancia intelectual e histórica. El proyecto también generó modelos de colaboración internacional y flujos de trabajo de digitalización a gran escala.

Born fi dead? Special collections and born digital heritage, Jamaica

***Born fi dead?* Colecciones especiales y patrimonio de origen digital, Jamaica**

Cherry-Ann Smart

IFLA Journal, 41-3, 230-236

Los artículos impresos de patrimonio cultural pertenecientes a colecciones especiales ocupan distintas posiciones en las bibliotecas. Su potencial pedagógico y didáctico puede estar poco explorado por problemas relacionados con la gestión de la conservación. Estos desafíos respaldan su exclusividad, una percepción que puede afectar a las relaciones con donantes e impide inconscientemente el acceso a la investigación. En cambio, las publicaciones electrónicas han ampliado el acceso de investigadores y expresionistas creativos a productos del patrimonio cultural de origen digital. Sin intermediarios, estos productores de

origen digital representan un “nuevo orden mundial” para las bibliotecas, con una doble responsabilidad en relación con el acceso y la posteridad. Algunos desafíos son infraestructurales, como por ejemplo la entrada de Internet; otros son humanos y surgen de la necesidad de crear capacidades en áreas como la publicación y las estrategias efectivas de conservación. Estas destrezas son esenciales para una plena conceptualización del potencial de pérdida de productos de patrimonio cultural y la necesidad de mecanismos viables para administrar contenidos; cualquier otra cosa haría que los productos de patrimonio cultural nacieran literalmente muertos.

**Digitization of Indian Manuscripts Heritage:
Role of National Mission for Manuscripts**

Digitalización del patrimonio de manuscritos indios: papel del *National Mission for Manuscripts* (Centro nacional de manuscritos)

Jyotshna Sahoo, Basudev Mohanty

IFLA Journal, 41-3, 237-250

India tiene la particularidad de tener una de las colecciones de manuscritos más antigua, rica y grande del mundo. Estos manuscritos son un poderoso medio para la conservación del patrimonio cultural indio en diferentes formas, idiomas, escritos y temas. Pero la conservación de estos manuscritos representa un serio problema para sus conservadores debido a las cálidas y húmedas condiciones climáticas del país. En este contexto, este documento da cuenta de los encomiables esfuerzos que realiza el *National Mission for Manuscripts* (NMM - Centro nacional de manuscritos) desde sus comienzos en 2003 estableciendo y reforzando 57 *Manuscript Resource Centers* (MRCs - Centros de recursos de manuscritos), 50 *Manuscript Conservation Centers* (MCCs - Centros de conservación de manuscritos) y desarrollando una base de datos nacional de manuscritos. El documento también presenta el estado actual de digitalización del patrimonio cultural indio en forma de manuscritos, empezando por su colección hasta el desarrollo de una biblioteca digital de manuscritos (BDM) para un acceso global.

Preserving digital heritage: At the crossroads of Trust and Linked Open Data

Conservación del patrimonio digital: en la encrucijada entre confianza y datos enlazados

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Independientemente de las tecnologías actuales o futuras, el acceso digital a los recursos de información conservados siempre será un desafío. Existen multitud de modelos, normas y prácticas óptimas que abordan diferentes aspectos de la conservación de objetos digitales. La gestión de objetos digitales requiere políticas y planes de gestión de datos bien definidos que abarquen todos los procesos dentro de su ciclo de vida específico. Para alcanzar altos niveles de intercambio de datos y reutilización de datos a largo plazo, APARSEN recomienda desarrollar un marco interoperable para identificadores constantes, allanando el camino para un 'Círculo de identificadores constantes fiables para datos abiertos vinculados'. Para permitir la interoperabilidad semántica de este círculo, este artículo propone esquematizar los metadatos LOD2 con la ontología del marco. El círculo puede enriquecerse aún más con la pila tecnológica LOD2 para enfrentarse al problema de confianza del ciclo de vida de los datos vinculados y al problema que conlleva Big Data. Para que sean fiables, las bibliotecas digitales tienen que ser auditadas y certificadas en cumplimiento con el marco europeo de auditoría y certificación.

The Universal Procedure for Library Assessment: A statistical model for condition surveys of special collections in libraries

El procedimiento universal para la evaluación de la biblioteca: un modelo estadístico para encuestas sobre condiciones de colecciones especiales en las bibliotecas

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Para proteger las necesidades de conservación y preservación de colecciones especiales en las bibliotecas, la fundación *Flanders Heritage Library* desarrolló el *Universal Procedure for Library Assessment* (UPLA - Procedimiento universal para la evaluación

de bibliotecas), un modelo para la evaluación de daños. Este modelo describe una evaluación de daños estadística de colecciones bibliotecarias, y determina el alcance de los daños y la accesibilidad de los materiales de la biblioteca. El modelo puede implementarlo el propio personal de la biblioteca tras haber recibido una formación básica. Esto garantiza la acumulación y el afianzamiento de conocimientos sobre el cuidado de los materiales de la colección bibliotecaria a lo largo de la evaluación del UPLA. Las estadísticas recogidas en la investigación son componentes para el desarrollo de una política de conservación y un programa de cuidados de la colección. Estas estadísticas también se pueden comparar con los datos recogidos por otras instituciones.

Flanders Heritage Library es una organización de red con seis bibliotecas de patrimonio en Flandes (en la parte norte de Bélgica). En 2013-2014, *Flanders Heritage Library* desarrolló el *Universal Procedure for Library Assessment* (UPLA - Procedimiento universal para la evaluación de bibliotecas).

Cultural Heritage digitization projects in Algeria case study of the National Library

Proyectos de digitalización del patrimonio cultural en Argelia: caso práctico de la Biblioteca Nacional

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Actualmente, la Biblioteca Nacional de Argelia se afana por digitalizar el patrimonio cultural de Argelia. Esta práctica se convirtió en una prioridad debido a los daños físicos que sufrían los manuscritos cuando se manejaban para leerlos. Este caso práctico intenta arrojar luz sobre los desafíos de la digitalización de manuscritos y libros raros en el contexto argelino. Además, este documento establece las aspiraciones y los planes de la Biblioteca Nacional para la digitalización exitosa de manuscritos y libros raros.

