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Abstract

The process of selection underpins many important questions facing those libraries which have responsibility for preservation. Properties of digital material present challenges to established preservation selection drivers and practices, including the increasing volume of digital material; the complexity of some digital objects; changing forms of cultural object creation and ownership; and the need for early interventions to keep material useable over time. This paper examines relevant library and related literature to identify and conceptualise factors which affect selection decision making relating to the preservation of digital material in libraries. It describes six organisational areas of concern: resources and volume; criteria; policy; legal and ethical issues; roles and responsibility; and user aspects of selection. Particular challenges include the need to revisit criteria and develop policies for preservation and selection along with the effect of unclear roles, responsibilities and expectations of a wide range of stakeholders.

Keywords

Digital material, libraries, preservation, selection

Introduction

This paper examines relevant library and other related literature to identify the factors which affect selection decision making relating to the preservation of digital material in libraries. It provides an overview and discussion of the issues found to be prominent within the literature. The authors are not aware of a published review of this nature, i.e. which conceptualises the subject. It is intended that it will add to debate around this topic and be of practical benefit to practitioners involved in this area of selection. The resources for this review were drawn from the library and digital preservation literature along with wider cultural heritage material, including relevant archive and museum resources. By searching both general Internet resources and specialist databases an extensive range of literature was found and analysed.

The introduction provides background to the subject and definitions of key terms used throughout. Following this, the article describes six organisational areas of concern relating to digital material which have been identified in the

literature. These are: resources and volume; criteria; policy; legal and ethical issues; user aspects; and roles and responsibilities. It ends with a conclusion that summarises findings from the above.

Digital material and heritage

The term 'digital material' is used throughout this article, referring to documentary heritage stored in a digital format. The UNESCO Memory of the World project defines documentary heritage as something that is: moveable; made up of signs/codes, sounds and/or images; preservable; reproducible and migratable; and the product of a deliberate documenting process (Edmondson, 2002: 8). It comprises

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the intellectual content and its carrier, and may include one item or a group of items such as in a collection. Alongside versions of traditional analogue items such as books or manuscripts, library collections may include digital documents, images, sound files, e-journals, multi-media resources, websites and other forms of digital material which contain intellectual content. Digital material may be either digital surrogates created by converting analogue materials to digital form (digitisation), or “born digital” [material] for which there has never been and is never intended to be an analogue equivalent ...’ (Digital Preservation Coalition (DPC), 2009a).

Material objects have a mnemonic role in society, reinforcing collective memory and identity (Green, 2008: 106; Smith, 2006: 304). Cultural or collective memories are communicative memories that are objectivised and institutionalised, located out in the world (Assman, 1995: 111). The term ‘memory institution’ is used in the literature to refer to libraries, archives and museums which have as part of their role the preservation of cultural or collective memory. A useful description of a memory institution is from Dempsey (1999), which links libraries and other institutions with cultural memory:

Archives, libraries and museums are memory institutions: they organise the European cultural and intellectual record. Their collections contain the memory of peoples, communities, institutions and individuals, the scientific and cultural heritage, and the products throughout time of our imagination, craft and learning. They join us to our ancestors and are our legacy to future generations.

Although this term includes archives, libraries and museums, and collaboration between these institutions is increasing, they have different approaches and goals for selection and preservation. It is beyond the scope of this article to describe these in detail; therefore this article focuses on libraries in particular. Many libraries have unique material or collections, including national, academic and public libraries and so have a mandate which not only includes providing information but also preserving these items or collections as heritage materials.

Digital heritage is defined as ‘a selected pool of material in a digital format deemed worthy of preservation for posterity’ (Cameron, 2008: 172). That heritage is also a political and cultural process is widely acknowledged in the broader heritage literature (for example Graham and Howard, 2008: 2; Hall, 2005: 24; Silberman, 2008: 82). It is the act of managing heritage that produces it – ‘heritage is heritage because it is subjected to the management and preservation/conservation process, not simply because it is’ (Smith, 2006: 11). Furthermore, the selection process creates heritage, as criteria determine what is to be valued and this is as true for digital heritage as it is for other forms of heritage (Cameron 2008: 177). When considered in this context, material selected for preservation reflects the

contemporary power structures, collective memories and desired future and purpose of those performing selection activities.

Selection in libraries

It is useful to differentiate the term ‘selection’ from similar terms such as ‘appraisal’ and ‘acquisition’. Whilst these terms may be used similarly in the literature, they have different meanings depending on the context. The National Archives Appraisal policy (Mercer, 2004: 3) defines appraisal as ‘the process of distinguishing records of continuing value from those of no further value so that the latter may be eliminated’. In records management, business and accountability reasons form the initial basis for deciding what to capture, but decisions on longer term retention depend on wider criteria, including cultural value and user need. Appraisal begins before the material reaches the archive. There is an assumption that much material will be discarded and only that which has been appraised as being of sufficient value will be retained. Librarians, however, collect not necessarily assuming that things will be kept permanently. In libraries the process of acquisition is that of obtaining ownership or access to material. When items are selected for acquisition there is an underlying decision on preservation implicit in the acquisition (Feather, 2006: 10). For example, by choosing to purchase a hard copy book rather than an electronic copy, subsequent preservation actions will be different (Foot, 2001: 21).

The contemporary approach to selection in libraries can be characterised as part of the process of collection management. This includes not only selection and acquisition of materials but also issues such as budgets, user studies and training pertinent to managing the collection (Day et al., 2007: 4). Librarians select items that they believe will be of interest to their users and focus on providing access to material. Selection, whether for immediate use or long-term preservation, is strongly related to actual or potential user need and demand (Clayton and Gorman, 2001; Harvey, 2005: 58; Johnson, 2009: 108). Eden (1997: 124) described traditional preservation selection by librarians as looking backwards to determine value, basing selection for preservation on what has been popular in the past. Whilst this may be arguable in part, other criteria are important. Knowledge of contextual factors is also key to decision making in libraries, including the mission of the library, the aims of its parent institution and the state of existing collections (Johnson, 2009: 116). Selection for preservation of analogue materials in libraries is driven by the physical condition of the item, using criteria such as value, the ability of the institution to preserve the item and costs. The purpose for which the item was acquired, whether for immediate short-term use where the item is replaced when a new edition is available or as an archival copy also acts as a selection driver (Foot, 2001: 4).

Selection of digital material for preservation

The advent of new media, new ways of creating material and the particular properties of digital material presents significant challenges to established preservation selection drivers and practices for traditional materials which cannot be applied in the digital context without modification. Selection of digital material differs from that of analogue material in many ways (Harvey, 2007: 10). Traditional forms of cultural object creation and dissemination are fragmenting and the range of formats that libraries have now to contend with is greater than before. Advances in technology have increased the ability of individuals to create and publish their own material, which then lies outside the traditional collecting scope of institutions. In addition, it is not always immediately clear which attributes of the material need to be preserved in particular contexts. The technical and practical challenges of preserving digital material are more complex than analogue. Practical guidance is available to libraries and other cultural heritage institutions about how to perform selection and appraisal (such as Harvey, 2007; NINCH, 2002; Whyte and Wilson, 2010). However, little research has sought to identify and understand the underlying organisational concepts and factors which influence the process of selection of digital material for preservation, despite clear implications for the management of libraries and collections.

Selection is necessary throughout the lifecycle of digital material and is relevant to many activities involved in its curation; this refers to the broader process of maintaining, preserving and adding value to material (Digital Curation Centre (DCC), 2010). Selection occurs when digital material is chosen for inclusion into library collections, as with analogue material, and when material is selected for deletion or weeding. Selection also occurs when material within the collection that the library has taken responsibility for is actively selected for specific preservation interventions. Not selecting digital material for preservation is effectively a choice to lose it and an institution must select which material is worth investing in for the future. Unlike traditional analogue collections, ownership or access to digital material does not always imply or equate to the ability to preserve either the content or the media, and so there is the need to make specific selection decisions about which material an institution will take responsibility for and for how long. Deterioration in digital material is not easily seen; it needs continuous preservation action to be taken to keep it useable over time. Decisions need to be made early regarding strategies for managing preservation when future requirements, technological developments and available resources are unknown.

Selection of digital material for preservation is an activity that is increasingly performed within libraries yet it has not yet been widely examined or conceptualised within the library literature. The process of selecting digital material

for preservation underpins many important questions facing those libraries which have preservation as part of their mission. The term 'digital preservation' used here follows the definition from the DPC (2009a), which broadly defines digital preservation as 'the series of managed activities necessary to ensure continued access to digital materials for as long as necessary'. Analysis of the library, digital preservation and wider cultural heritage literature reveals six areas of particular concern for the management of selection for preservation of digital material. The following sections describe these areas in more detail.

Issues in selection

Resources and volume

Preservation of a digital object has to be a deliberate act on which a decision is made, due to qualities inherent in the material. These include the fragility of the storage medium and the dependence of the data on specific hardware or software to read it, which are themselves under threat from obsolescence (Rothenberg, 1999: 2). Due to these technical considerations it is not possible to expect digital material to survive without deliberate, potentially expensive, intervention. Digital preservation is assumed to be expensive as infrastructure and ongoing maintenance costs would be high; on this basis the CEDARS project justified the need for selection (Russell, 1999). Although this view has been challenged (Rusbridge, 2006), the argument pervasive throughout the literature is that there are inadequate resources to preserve all digital information (for example Berger, 2009: 60; Harvey, 2007: 8; Russell, 1999).

Whilst the issue of resources is not limited to digital material, it becomes pressing when the cost of digital storage, expertise in information technology, curatorial skills and the need for constant interventions to keep material useable are considered. Various projects have examined the issue of costs and business models for economically sustainable curation and preservation, for example the KRDS (Beagrie et al., 2008a) and KRDS2 projects (Beagrie et al., 2010); the Blue Ribbon Task Force (BRTF) 2010; the LIFE series of projects (Wheatley and Hole, 2009); the CARARE project, part of the Europeana Project Group (Moore et al., 2010). Projects have shown that there are many different business models and that there is as yet no solution to the problem of funding long-term preservation, especially when many digital preservation initiatives and activities are supported on a project or short-term financial basis. With limited resources and unclear business models selection of digital material for preservation, or more specifically for preservation actions, becomes even more important. As the BRTF report (2010: 46) makes clear, when considering the ongoing costs of preservation and the potential for improving cost-efficiency, selection criteria to prioritise preservation investment are critical to sustainable preservation. The

report makes selection of materials with long-term value one of its conditions to achieve economic sustainability; selection is necessary to give priority to 'materials that have the greatest promise of returning value to users over time' (BRTF, 2010: 76). Careful selection to target resources at preserving the most valuable material is essential to provide a sustainable service. But the question remains that as there is no way of predicting what future users may need, on what basis could libraries select items now? The BRTF (2010: 37) ask this question and recommend an 'option strategy' as a potential way forward. They reiterate the problem of non-selection equating to deletion and the cost this could involve as the decision is irreversible. Instead they suggest that a small investment in 'holding' the material, in case it becomes important later, may be justified. Decision makers would be 'purchasing an option' to put off final decision making. This seems an attractive alternative, but there is no way to predict when demand may increase and it would still require funding and expertise to preserve access to the material until a decision can be made.

Additionally the volume of digital information that is available to be preserved is too large for it to be feasible to preserve everything, so selection is inevitable (for example Deegan and Tanner, 2006: 15; DPC, 2009a; Feeney, 1999: 11; Harvey, 2007: 9). We cannot save everything. This assumption has also been challenged in the literature, particularly on the basis of cost. Bearman (2007: 35) suggested if preservation takes place on the network, only a few copies of an object need be kept; everything could be selected due to economies of scale. Neumayer and Rauber (2007) in their deliberately provocative position paper point out that appraisal in its current form is very expensive and suggest a form of random selection to be more cost effective.

The approaches taken by national libraries to selecting web material for preservation demonstrate strategies to manage selection on a large scale. These can be divided into two broad categories – automated and selective. Periodic harvesting of the whole web domain is performed for example by the National Library of Sweden and the Internet Archive (from the USA) using automated harvesting robots. The selective approach is used by national institutions such as Australia's Preserving and Accessing Networked Documentary Resources of Australia (PANDORA) archive and the National Library of Denmark. The selective approach involves using a predetermined set of criteria to choose which websites to preserve, perhaps based on specific themes or events. In the UK the British Library (BL) and partners including the National Library of Wales, the Wellcome Library and JISC (Joint Information Systems Committee) provide the UK Web Archive. Here staff choose specific web material for preservation, according to specific criteria, allowing contributing institutions and individuals to nominate websites for inclusion whilst retaining final curatorial control. The selective approach may have a number of advantages for institutions, including

limiting the amount of web material collected, increasing quality control, aiding cataloguing and making the material easier to manage (Hockx-Yu, 2011; Phillips, 2009; ULCC and UKOLN, 2008: 19). The automated and selective approaches may also be used in conjunction, such as by the Bibliothèque nationale de France (BnF), who perform both bulk automatic harvesting of French websites and focused crawls based around themes or events of sites chosen by library staff (BnF, 2011). It is clear from the literature that preservation of digital material is considered currently expensive and there are not enough resources to preserve everything. New strategies for selection must be developed; decisions on strategies and criteria for selection need to be made to manage the large volume of material within available resources.

Criteria

Article 7 of the UNESCO Charter on the Preservation of the Digital Heritage (2003) states: 'As with all documentary heritage, selection principles may vary between countries, although the main criteria for deciding what digital materials to keep would be their significance and lasting cultural, scientific, evidential or other value'. Criteria for selection have long been an issue in the library literature regardless of format. A taxonomy of preservation for micro-filming was suggested by Atkinson (1986) who divided material into different classes based on the type of value they have, such as economic or high-use. These different classes would then have different criteria applied to them. Despite the debatable nature of the classes, Atkinson recognises different motivations for preservation, such as protecting the capital value of the collection. Further research on selection criteria has been conducted in the context of selecting analogue material, including books and micro-films, to be digitised (Ayris, 1998; Hazen et al., 1998; NINCH, 2002). Gould and Ebdon (1999: 12) surveyed national libraries, universities, archives and other cultural heritage institutions and found that the most prevalent criteria were (in decreasing order):

- historical and cultural value;
- to increase access;
- academic importance;
- to reduce damage;
- preservation.

Over half of all respondents chose these criteria, as opposed to 15% or fewer that chose 'save space', 'research in to digital processes' or 'commercial exploitation'. Although the question included an option to describe any other criteria used, it is not clear from the report if any more were suggested. A more recent study by Ooghe and Moreels (2009) analysed criteria for digitisation obtained from policy documents in institutions from various countries. They

Table 1. Core criteria found in the digitisation literature examined and the DPC decision Tree.

	Gould and Ebdon (1999)	Ooghe and Moreels (2009)	DISCmap project (Birrell et al., 2011)	DPC Decision Tree (2009b)
Value	X	X	X	X
Costs		X		X
Collection policy		X		X
Documentation		X		X
Access	X	X	X	
Demand		X	X	
Preservation	X			X
IP rights		X		X
Condition of original	X	X		
Commercial exploitation	X	X		
Use	X	X	X	X

Note: IP: intellectual property.

found many criteria which they grouped into six categories: institutional frameworks; value; physical criteria; copies and multiples; metadata and financial frameworks. Whilst some of the criteria are similar to that proposed in earlier work, Ooghe and Moreels (2009) reveal a greater emphasis on issues relating to long-term sustainability. However, as Edwards et al. (2000: 21) note, selection for digitisation has different motivations and implications than selection for preservation and Ooghe and Moreels (2009) have specifically focused on criteria for digitisation, deliberately setting to one side the problem of born digital material and long-term preservation. The work by the DISCmap project (Birrell et al., 2011) also focuses on criteria for digitisation, specifically of special collections in a higher education context, but interestingly compares user priorities with those of 'intermediaries (librarians, archivists and curators)'. They highlight similarities and differences in criteria considered appropriate by each group. Unsurprisingly the two groups had some overlapping criteria such as improved access, enhancing research and teaching, and allowing collaboration. However there were differences, reflecting the focus of the users and intermediaries' interest. For example, the intermediaries' criteria included enhancing the teaching of distance learners, whereas the users' criteria included 'increase frequency of use' (Birrell et al., 2011: 37).

Despite a small sample size, an interesting survey of preservation activity in Wales found that 36% of respondents did not seem to have any criteria and they note that those that did seemed to base criteria on analogue material (McInnes and Phillips, 2009: 5). Literature examining criteria specifically for preservation highlights the importance of an institution having the necessary ability to preserve digital material, both technologically and economically (Seadle, 2004). The practical Decision Tree developed by the DPC (2009b) to help organisations formulate selection policy, includes important criteria which institutions need to consider in selecting digital material for preservation. Many of these such as institutional mission, statutory require-

ments to preserve the material and long-term value are similar to criteria used in selecting analogue material. Table 1 compares the criteria suggested in the digitisation literature previously examined and the Decision Tree. The criteria in the table are those most commonly mentioned and so constitute a 'core' set; Table 2 in Appendix 1 contains a full list of criteria found in these resources. Whilst there are parallels between the criteria suggested for digitisation, for digital preservation it is clear that technical considerations are present much earlier in the lifecycle of digital material and assume much greater importance. Whilst this is pragmatic it does mean that items of value may not be preserved because they are not easy, a problem discussed unfortunately briefly by Deegan and Tanner (2006: 16).

Value of the material is the common criterion for digitisation and preservation throughout the literature examined. The issue of value is central to the question of selection, as selection is the process of determining what is valuable enough to provide resources to keep; in selecting material librarians are ascribing value to it (Conway, 1996). The terms 'value', 'importance' and 'significance' are all used in the literature for describing criteria for selection. But the use of value as a criterion is not unproblematic. Many different types of value have been identified as relevant to the wider cultural heritage sector. Throsby (2001: 28–29), for example, identifies a range of cultural value characteristics, including aesthetic value; spiritual value; social value; historical value; symbolic value; and authenticity and integrity. These types of value are of relevance when considering the impact or benefits of activities, such as digitisation projects (Tanner, 2010). However, value as a concept in the context of selection is under-examined in the literature. The value of material will vary between institutions and stakeholders; value is not a static characteristic. It may change over time – an academic library could find some of its collection is of less value when the university subject priorities change for example. However, there may be common criteria that can be formulated to determine value. For example

the 'Significance 2.0' guide from the Collections Council of Australia (Russell and Winkworth, 2009) attempts to provide guidance to librarians and others working with collections on value and significance. It suggests eight criteria that may be used to assess the significance of collections, including historic, aesthetic and potential research value. The guide makes the benefits of assessing significance clear, and this includes aiding selection for preservation actions and collaboration between institutions. The terms 'significance' and 'value', which are closely related, are often used interchangeably to indicate a measure of perceived worth. Different meanings of 'significant' in have been identified in the literature and may refer to 'information-level' or technical properties of a file that need to be preserved or to a wider set of properties that are significant to stakeholders (del Pozo et al., 2010: 293). The former refers to the concept of 'significant properties'. Hockx-Yu and Knight (2008) and Knight and Pennock (2009) discuss the concept, the latter defining significant properties as 'the characteristics of an information object that must be maintained to ensure that object's continued access, use and meaning over time as it is moved to new technologies' (p. 160). The dual meaning of 'significant' in the literature could cause confusion.

If selection criteria are formulated too much on the basis of current policies and priorities this could lead to the loss of valuable data (Russell, 1999). It is clear from the literature that criteria are necessary to provide guidance on selection but there is no agreement on which are most appropriate. This will depend on the context in which the library operates. Technical ability and adequate resources are clearly important, but conceptual criteria such as value are as yet under-examined.

Policy

In order to make apparent the aims and methods of selection within an institution it is recommended in the literature that it develops clear policies. A policy is 'a formal statement of direction or guidance as to how an organization will carry out its mandate, functions or activities, motivated by determined interests or programs' (Interpares2, 2011). The UNESCO guidelines for the preservation of digital heritage (2003: 59) make clear reasons for an organisation to create a preservation policy:

Preservation programmes should be guided by a policy framework that says what the programme is trying to do and how it will try to achieve it. In a field of such complexity and evolving understandings, a policy document needs to provide clear, long-term direction as well as regularly reviewed guidance.

A preservation policy is critical to libraries as preservation activities need to be considered within the overall collection management approach (CEDARS, 2002: 12–13). A

policy is necessary to provide direction and guidance to an internal audience and to define why an organisation is doing digital preservation, for both internal and external stakeholders. Funding and strategy decisions may need to be justified. A policy also acts as the authority for those undertaking digital preservation (National Archives, 2011: 5). It may be appropriate and useful for an organisation to create an aspirational policy if a working policy is not yet appropriate; this makes a statement of commitment to digital preservation even if specific activities are still being developed (National Archives, 2011: 6); such a policy may have reputational value to an organisation.

Research has consistently found a lack of digital preservation policies within institutions (for example Ayre and Muir, 2004: 107; Beagrie et al., 2008b: 1; Waller and Sharpe, 2006: 16). A survey for the Planets project (Preservation and Long-term Access through Networked Services) found that 43% of libraries who responded had a digital preservation policy (Sinclair et al., 2009: 274). While this figure may seem low, it demonstrates an increase since the survey in 2004 by Ayre and Muir (2004: 107) who found that only four out of 69 libraries who responded had digital preservation policies. Unsurprisingly, Sinclair et al. (2009: 280) also found that those organisations with a policy were much more likely to have solutions, budgets and plans in place for the long-term management of digital material. What these surveys do not uncover though are the barriers to libraries and other institutions engaging sufficiently with the need for policy development. Although each library has its own priorities, the lack of consistent terminology within guides and publically available library policies, which can be used as exemplars, is problematic for those seeking to formulate policies of their own. An institution may refer to its selection policy as a collection management or collection development policy. Other institutions may present their preservation or selection guidelines within other wider policies or strategies; additionally the definitions of 'policy' and 'strategy' are not consistent (Dappert et al., 2008: 9). However, there is guidance available to cultural heritage institutions who are considering formulating a policy for digital preservation, including the ERPANET policy tool (2003); the DPC Decision Tree (2009b); JISC-funded research by Beagrie et al. (2008c); and the National Archives guidance (2011). The National Preservation Office at the British Library, now the Preservation Advisory Centre, also published a short booklet giving guidance on preservation policies which briefly mentions digital material (Foot, 2001). Despite the availability of policy guidance there is no agreement within them on what preservation policies should contain, perhaps reflecting the different purposes and contexts in which these policy guides are set. Whilst the importance of having a selection policy for digital preservation is recognised (UNESCO, 2003: 71 for example) there is little guidance specifically on selection policies for digital preservation.

Whyte and Wilson (2010) have produced guidance on selection for the curation of research data in which they discuss selection policies, although this section is brief. Beagrie et al. (2008c: 20) recommend including in a digital preservation policy a section on 'identification of content', which details the material to which the policy applies, including its relative priority or value. This clause could include appropriate selection principles. However, the digital preservation policy guides mentioned above are concerned more with submission guidelines, reflecting their origins in the higher education or archives sectors which have institutions with repositories that accept research data, or archives with clear statutory responsibilities for certain types of material. Each library therefore must adapt the guidance to suit their particular context and needs.

Legal and ethical issues

The context in which any library operates is bound by a legal and ethical framework. Copyright and related rights are important factors in digital preservation activities, including selection. Librarians wishing to make copies of material for preservation purposes, for instance in order to move content to new storage media when the old media becomes obsolete, may need to obtain the copyright owners' permission; Muir (2004: 76) outlines the rights implications of various preservation strategies. If the rights in digital material are unclear this may act as a disincentive to select material for preservation and it is appropriately suggested as a criterion for selection in the DPC Decision Tree (2009b). The relevant law varies internationally. Muir's position piece (2006) aimed to provoke debate around the potential impact of current legal provisions on the preservation of digital materials in libraries in the UK and Besek et al. (2008) provide an overview of the impact of copyright law on digital preservation in Australia, the Netherlands, the UK and the USA. The KEEP (Keeping Emulation Environments Portable) project has produced a *Layman's Guide* (Anderson, 2011) to the relevant European Community law and international treaties that affect the work of the project and the legal position in the Netherlands, Germany and France.

In the UK, the relevant act is the *Copyright, Designs and Patent Act 1988* (Great Britain, 1988), as amended. The Act includes a preservation exception (s. 42) whereby prescribed archives and libraries are allowed to make copies for preservation purposes, providing certain restrictive conditions are met. These include that the material is for reference only and that it is a literary, dramatic or musical work, not artistic or a sound recording. The *Gowers Review of Intellectual Property* (2006) recognised the difficulties faced by libraries and other institutions that are unable to legally make copies of works for preservation purposes. Recommendations 10a and 10b from this report refer to allowing libraries to make copies of all types of material in

order to alleviate wear and tear and to shift formats to avoid obsolescence (Gowers, 2006: 66). The Intellectual Property Office (IPO) has worked to take the recommendations from the *Gowers Review* forward, with a two-stage consultation beginning in 2008. The second stage of this, which ended in 2010, included requesting comments on a draft Statutory Instrument to expand the exceptions to allow copying for preservation purposes (IPO, 2010: 52). The difficulties faced by libraries in preserving content was yet again recognised by the Hargreaves report (2011: 50) but the preservation exception remains unchanged at the time of writing.

National libraries have a remit to collect documentary heritage of national interest regardless of format. In the UK, the *Legal Deposit Libraries Act 2003* (Great Britain, 2003), will require secondary legislation to expand the scope of legal deposit beyond print material and to bring a preservation exception for legal deposit libraries (s. 44A of the *Copyright, Designs and Patents Act 1988*, Great Britain, 1988) into effect. A voluntary code for publishers to deposit microfilm and offline digital material with the British Library, one of six legal deposit libraries in the UK and the Republic of Ireland, has been in place since 2000 and was updated in 2010. A pilot scheme for scholarly electronic journals was begun in 2007 (British Library, nd). The Legal Deposit Advisory Panel (LDAP) was established to understand the conceptual and practical problems of extending legal deposit (Gibby and Green, 2008) and to make recommendations on further regulation. The Department for Culture Media and Sport (DCMS) launched a public consultation exercise in December 2009 regarding the panel's recommendations and a further consultation, including draft regulations, in 2010. The LDAP was disbanded in 2010 by the then new government in a review of public bodies (DCMS, 2010). It is clear from the government response to the last consultation (DCMS, 2011) that both libraries and publishers have numerous concerns about potential regulations and there are many issues still to be agreed upon between the various stakeholders before any regulations can be introduced.

In addition to the legal framework, ethical issues of library practice and professionalism are relevant to selection. Berger (2009) examined the role of ethics in decision making for digital preservation. In her view preservation is a by-product of the ethical imperative to provide access to material as items need to be preserved to have access to them for longer. But as we are unable to keep everything, the ethics of preservation becomes closely related to the issue of selection (Berger, 2009: 60). A further ethical issue arises when the creation of criteria for selection is considered. Lloyd (2007: 60), argues that 'the development of criteria, while it is claimed to be an objective process, in fact underlies the subjective positions and political interests of those charged with determining significance and thus privileges some memories over others'. She goes on to argue (p. 63) 'assessing an item's value ... against a formulated

set of criteria appears reductionist; it assumes that core values and beliefs about what is worth remembering are common to the diverse groups that constitute a society'. The question of whose values are being used in the formulation of criteria does not seem to be answered within the preservation literature. This reflects issues described in the wider heritage literature of the disenfranchisement of minority voices. In acting as a symbolic representation of national identity and a signifier of collective memory, it has been argued that heritage can ignore the local and minority cultural experiences and promote the values, aesthetics and experiences of the elite (Hall, 2005: 26; Samuel 1994: 211). The ethics of censorship are relevant here as it is also an exercise in power. It can be argued that selection is censorship in disguise as the end result is the same: that material is not available to users. Censorship and selection are different processes and it is important to make clear the distinction. Asheim (1953) described this difference as where the selector positively tries to find reasons to keep a book in an inclusive way, but the censor negatively tries to find reasons to exclude it. Commentators have found this liberal view attractive, such as Malley (1990: 28) and Clayton and Gorman (2001: 77). There is a professional library ethic to be unbiased in selection decision making; this is explicit for example in the set of Ethical Principles and a Code of Professional Practice for Library and Information Professionals developed by CILIP (Chartered Institute of Library and Information Professionals) in the UK. In acting as 'proxy' for their user communities in selecting material it is imperative that librarians adhere not only to the legal context but also to professional codes and standards; this will help avoid potential accusations of bias or censorship. In addition, acknowledgement of the potential role of other stakeholders in the process is important. As Lavoie and Dempsey (2004) maintain, selection for digital preservation is a social and cultural process. The following two sections explore this further.

User aspects in selection

Libraries are competing for the attention of users in an increasingly networked environment, which changes user behaviour and expectations of services (Dempsey, 2006). New social media services that facilitate the creation and sharing of knowledge, personalise the user experience and provide a seamless user experience are proliferating. What is clear from the library literature is that whilst there is acknowledgment of the potential role of users in selection of material, there are very few examples of this occurring and then only in a prescribed manner. Projects have been conducted in which users have been involved in 'crowd sourcing' activities which include users in the creation and gathering of material, such as in the British Library's UK Soundmap (Pennock and Clark, 2011), or the World War 2 'People's War' project by the BBC (2006). Gracy (2007)

examines the concept of moving image archives created by users and creators lying outside institutions, as are being seen with YouTube or the Internet Archive (p. 193). She rightly acknowledges the difficulties of this type of creation and selection, especially with copyright legislation leading to the need to control content and economic drivers toward control by corporations (pp. 194–195). However, she also asks whether libraries and archives are still in possession of curatorial authority over cultural heritage, or if they should recognise the role creators and users have in defining what is valuable enough to preserve? Marchionni (2009) argues that users partly determine the value of digital material, from when it is created, due to their use of it. The question of user involvement in determining value relates to debates in the wider heritage management literature. Cameron (2008: 180) and Smith (2006: 12) have questioned the hegemony of heritage management and the role of non-experts in using and creating heritage in their own way. Experts are seen as stewards for the future, with a responsibility for acting as a 'proxy' for the public. Gibson (2009: 75–76) demonstrates from a built heritage perspective that the language used in heritage documents, regardless of the well-intentioned articulation of inclusive and consultative principles, undermines the commitment to these principles by putting communication with other stakeholders second to the evaluation and determination of significance by experts. The assumption that those who work in libraries, archives and museums are best placed to select which items of digital cultural heritage are to be preserved has also been challenged by MacKenzie Owen (2007: 45) and Bearman (2007: 30), who argue that the emphasis on defining digital preservation in terms of an individual institution is limiting and leads to material which is relevant to contemporary culture being missed by preserving institutions. The role of users, along with other stakeholders, in selection is unclear.

Roles and responsibilities

The role of librarians, as experts, in creating digital heritage by the use of criteria and selection decisions has not been widely examined in the literature. The literature does reflect the idea that part of the role of libraries is preservation of cultural memory and this continues in the digital context (Feather, 1996: 58; Usherwood et al., 2005). Responsibility for the preservation of digital material is an important issue to libraries as the commitment and resources necessary to preserve material especially in the long term is very great. As digital preservation is a deliberate act there is a need for responsibility to be taken for the material and the preservation process. This applies at a curatorial level within a library and also on a higher institutional strategy or policy level. From early in the digital preservation literature the importance of clear responsibility for decision making and preservation has been recognised (Ayris, 1998; Eden, 1997; Haynes et al., 1997; Waters and Garrett, 1996). Digital

material may have multiple stakeholders: creators, publishers, rights holders, librarians and users. There may be a wide range of stakeholders that have responsibility for digital material at some point in its lifecycle; different stakeholders have influence on and interest in preservation at different stages (Beagrie and Greenstein, 1998). Few organisations or individuals that become involved with the development or management of digital resources have influence over those resources throughout their entire lifecycle. This can lead to a lack of clarity regarding responsibility, both within and between institutions. The *Mind the Gap* report (Waller and Sharpe, 2006: 16) found only 33% of organisations surveyed had clear a responsibility structure for digital preservation. Jones and Semple (2006) describe how responsibility within an institution for preservation is unclear as it could be seen as 'an IT problem', neglecting the valuable input of information and curatorial professionals, especially in selection of material. On a national level, Verheul (2006: 29) in her survey of 15 national libraries found that whilst the libraries all had at least one unit or department that referred to digital objects in some way, none of the libraries had placed all digital preservation activities in one unit. She found that cooperation between departments was often through formalised arrangements with cross-sectoral working groups (p. 31). As Jones and Semple (2006) rightly point out, digital preservation needs to be a cross-disciplinary area as relevant skills may be spread throughout an organisation. In addition, digital preservation is a cross-sectoral issue in which libraries, archives and museums in their role as memory institutions have an interest. Digital objects are not dependent on a geographical location, as shown by the development of cloud computing services; digital material can be accessed from anywhere, with the appropriate technology and no legal restriction on remote access, so there is less need to visit the institution (Feather, 2006: 12). As Dempsey (1999) comments: 'The user wants resources bundled in terms of their own interests and needs, not determined by the constraints of media, the capabilities of the supplier, or by arbitrary historical practices'. These factors may act as drivers toward shared services, practices and policies for selection and preservation between traditionally separate sectors such as libraries and archives. An example of this is from Canada where the National Archives and the National Library merged to become Libraries and Archives Canada (LAC) in 2004 (LAC, 2011); the combined institution has a single digital collection policy and digital preservation policy.

A particular problem for many libraries which illustrates the lack of clarity is the issue of responsibility for preserving e-journals and other electronic resources to which the library leases access through licences from publishers. With hard-copy material, if a journal subscription was cancelled the library would still have ownership, access and responsibility for the back issues they had bought. However, this is not the always the case with licensed digital material,

though libraries may be able to arrange or purchase access to back files. Responsibility for preserving licensed material such as e-journals is a complex issue and it is unclear where this should lie. Interested parties include publishers, libraries, institutional repositories, legal deposit libraries and third-party services such as Portico. It is clear that unless there are specific arrangements for archiving the material, such as archival clauses in licences, preservation and ongoing access to the material by libraries cannot be guaranteed. In response to this, some libraries have taken responsibility for preserving their licensed material. Muir (2004: 80–81) found in her survey of libraries that the majority already took responsibility for preserving their digital collection and this included 17.3% which took responsibility for preserving material to which they only had licensed access. More recent surveys have been performed on this issue amongst different stakeholders, such as those by the PARSE.Insight project (Kuipers and Van der Hoeven, 2009) who surveyed researchers, data managers and publishers from the EU, USA and elsewhere; Durrant (2008), who surveyed publishers; and Meddings (2011), who conducted a survey of academic libraries. These all report a desire for national libraries to have a large role in preserving e-journal material. For example, Durrant found that 70% of respondents from the Association of Learned and Professional Society Publishers saw the responsibility for long-term preservation of electronic scholarly material to lie with national or legal deposit libraries (Durrant, 2008: 6). Only 44% felt each publisher could create its own repository for its digital content. Sustainable preservation needs responsibility taking not only for the selection and preservation of material but also for funding and it is unlikely that only one set of stakeholders will be able to do this. With the advent of new technologies such as cloud computing a collaborative approach to selection and preservation is becoming more feasible and may be a way forward. For example, the UK Research Reserve (UKRR) service for higher education libraries has been developed. Run in partnership with the BL, the programme allows participating libraries to take part in collaborative collection management for low-use print journals. Participating libraries are able to select and deselect material with more confidence and the responsibility for preservation is spread between institutions.

By examining the literature it becomes clear that there are no clear roles and responsibilities for selecting digital material for preservation. Despite the large amount of digital material created in new ways with new media outside the traditional collecting remits of institutions, libraries have a role in selecting digital material, creating heritage and cultural memory. There are many stakeholders in selection and preservation both within and external to an institution: librarians, rights holders, creators, institutional managers, publishers and users may all have roles and responsibilities. A possible way forward is through

collaborative approaches to selection and preservation between different stakeholders.

Summary and conclusion

It is clear that selection is an important process involved in the management of digital resources and is necessary to ensure that quality digital material is not lost. Selection for preservation is not a decision that can be postponed, unlike for much traditional analogue material, as digital material requires ongoing interventions to keep it accessible from early in its lifecycle. The challenges posed by the vast amount of digital material available and the potential costs of sustaining preservation activities with limited resources highlight the importance of selection; libraries cannot preserve everything. Yet because of the peculiar properties of digital material, selection criteria for preservation are necessarily different to those for analogue material and for digitisation. Practical questions become more prominent, such as the ability to preserve different formats and obtaining permission from the copyright holder to perform necessary actions. Many libraries, especially those with a national collecting remit, are required to fulfil roles as heritage institutions and preserve our digital cultural material for future generations. This role is undermined by the ease by which digital material is created, copied, manipulated by those lying outside the usual collecting domain. Responsibility for preservation or selection is not always clear both internally and between different external stakeholders such as libraries, users and publishers, so new roles and responsibilities need to be negotiated with stakeholders. The importance of selection of digital material for preservation is recognised in the literature, but as yet the focus is more on practice than tracing underlying influences and concepts. The issues found in the literature lead to many further unexplored questions. In particular, the influence of organisational structure and internal co-operation has not been fully addressed – how is digital preservation organised within institutions? Who takes responsibility and what institutional conditions influence the effectiveness of selection and preservation? Institutions that preserve digital material must engage with the issues involved in selection of digital material if they are to build sustainable services.

Further research is required to investigate and conceptualise the institutional motivations and influences on the selection of digital material, especially from the perspective of managers and librarians who are responsible for this activity, and place the activity in a historical and organisational context. Concepts involved in selection need to be clarified as without a clear, shared, conceptual understanding it is more difficult to create effective policies and practices, to formulate guidelines and to share best practice. By identifying relevant concepts, describing the relationships between them and so understanding the conceptual underpinnings of selection for digital preservation, the principles,

policies and practices that are well established in the traditional library context may be updated to take account of changes resulting from the collection and preservation of digital material.

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Appendix I

Table 2. Full list of criteria suggested for digitisation.

Authors and context	Criteria
Gould and Ebdon (1999: 12) digitisation in national libraries, universities, archives and other cultural heritage institutions	<ul style="list-style-type: none"> • historical/cultural value • increase access • academic importance • reduce damage • preservation • provide document delivery services • save space • research into digital processes • commercial exploitation
Ooghe and Moreels (2009) selecting content from heritage collections for digitisation	<p>institutional frameworks:</p> <ul style="list-style-type: none"> • collection policy • aims and purposes of the existing digital collection • selection by collection design • copyright and other legal restrictions <p>value of the material:</p> <ul style="list-style-type: none"> • intrinsic value (content, completeness, clarity) • selection and audience – use value • accessibility and availability • contextual value • selection by affiliation • representativity • arbitrary/randomised selection – sampling • aesthetics and visual appeal <p>physical criteria:</p> <ul style="list-style-type: none"> • accessibility of content • physical state of the material • quality after digitisation • added value after digitisation <p>unicity and digital multiplicity:</p> <ul style="list-style-type: none"> • copies and multiples within the collection • multiplicity across collections • digital substitution • selection through metadata <p>financial framework:</p> <ul style="list-style-type: none"> • costs of digitisation • cost of selection • opportunity costs – the cost of loss • cost of metadata • potential income – economic selection <p>Criteria chosen by users:</p> <ul style="list-style-type: none"> • improve access • positive impact on research or studies • enable increase in the frequency of use • assist in preservation and conservation of a collection • because a collection is rare or valuable • positive impact on teaching • bring distributed parts of a collection together • improve intellectual coherence
DISCmap project (Birrell et al., 2011) higher education - prioritisation of a collection for digitisation	

Table 2. (Continued)

Authors and context	Criteria
Decision Tree developed by the DPC (2009b) Selection of digital materials for the long-term	<ul style="list-style-type: none"> • allow collaboration <p>Chosen by intermediaries:</p> <ul style="list-style-type: none"> • to improve/facilitate access • to meet evidence of user demand • to enhance teaching of undergraduate and taught masters course • to enhance teaching of networked courses for distance learners • to support ongoing research • support research in multiple disciplines (interdisciplinarity) • a means of furthering collaborative research projects • potential to create a new subject area for research • create / support research and teaching using new media • potential impact for users beyond the boundaries of HE <p>When creating policies, consider questions of:</p> <ul style="list-style-type: none"> • meeting collection policy • long term value • type of use • implications of accepting responsibility for the material • technical ability to manage formats and media both now and in the future • costs and risks of managing the resource • technical ability to store and migrate the material • adequate documentation

Author biographies

Adrienne Muir is a Senior Lecturer in the Department of Information Science, Loughborough University. Her research interests include digital curation, legal and ethical issues in information management and national information policy. Previously Adrienne managed Digital Library and Preservation research programmes for the British Library Research and Innovation Centre and the Library and Information Commission. She was a researcher in information and cultural policy at the Policy Studies Institute and a curator at the National Library of Scotland.

Graham Matthews is Professor of Information Management, Department of Information Science, Loughborough University.

He has a PhD in preservation management in libraries. He was Chair of the CILIP Preservation and Conservation Alliance (previously Panel) (member, 2003– Chair, 2006–2011) and a member of the British Library Preservation Advisory Centre Advisory Panel (2009–2012). He has undertaken research and written widely about various aspects of preservation in libraries.

Clare Ravenwood has an MA in Information and Library Management from Loughborough University and is now a doctoral researcher there. Her work is investigating the theory and practice of selection of digital material for preservation, focusing on libraries, archives and museums.