



Mapping the Future of Academic Libraries

A Report for SCONUL

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[#mappingacademiclibraries](#)

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Executive summary

Introduction

Academic libraries currently operate within and contribute to a rapidly changing environment. Being aware of what is changing and ensuring that libraries can continue to play a useful role in higher education (HE) is a profound ongoing challenge. This report aims to help in addressing that challenge. It considers library futures over the next decade, a formidable but important undertaking.

We have based our analysis on a mixed-methods research project involving a review of the literature, in-depth interviews with a range of stakeholders both within and beyond the library community, and a survey of library staff. We report our findings as well as providing reflection on their implications for libraries and their future.

Identifying the trends

We begin by discussing major trends that are impacting libraries and which libraries are helping to shape. There is awareness amongst our participants of a large number of inter-related trends but little agreement on what is most important. We argue that it is often a nexus of different trends, rather than any one single trend, that is likely to bring most significant change. We identify five such nexuses:

- **Nexus 1: 'datafied' scholarship** – research increasingly underpinned by large datasets and digital artefacts, involving open, networked, algorithmically-driven systems
- **Nexus 2: connected learning** – new pedagogies supported by technology-enabled flexible learning
- **Nexus 3: service-oriented libraries** – libraries shifting their strategic emphasis from collections to services
- **Nexus 4: blurred identities** – boundaries between professional groups and services being broken down with more collaboration and new skills development
- **Nexus 5: intensified contextual pressures** – a myriad of political, economic and other pressures creating demands on higher education and libraries

Recognising the challenges and opportunities

Having identified major trends, we go on to discuss the ways in which libraries perceive them and the challenges and opportunities they create. One view expressed by many of our participants, which seems to have shaped their responses to a wide range of other issues we raised, was that the library of the future looks very similar to what exists now. The results of our survey showed that most library staff believe that the library will continue to be a physical presence and that there will be a separate building called the library. At the same time, participants observed that the balance between print and electronic collections is changing in libraries, and has been doing so for some time. However, there was little consensus about when or where such changes will end. There is a need for the shift from print to digital to be managed strategically and to be operationalised with greater clarity. Despite this shift, libraries have yet to create a compelling digital presence, for either learning or research, that corresponds to their successful physical learning spaces.

The need for libraries to move from emphasising collections to services (or at least, collections as one service amongst others) was widely acknowledged. Related to this, there was agreement that the 'inside-out' role of libraries – in which libraries manage internally generated content for sharing beyond the institution – needs to be increasingly important. This role complements the traditional 'outside-in' role of libraries of selecting, acquiring and managing externally produced content for an institutional community. At the same time, many participants did agree that the traditional role of the library in discovery of resources in a networked world needs greater clarification and focus.

Our research did, however, uncover evident challenges for libraries in their interaction with major trends. Apparent gaps in awareness, for example around artificial intelligence and machine learning, need to be addressed. The view was expressed that the library profession would benefit from being more outward-looking and from engaging in more long-term thinking. Underlying many of the management challenges spoken about by participants were concerns about issues such as performance indicators, demonstrating value for money and engendering a 'businesslike' approach. There were contrasting attitudes to such trends, often seen as evidence of increasing 'McDonaldisation' of higher education.

Positioning the library

We investigated how libraries are positioning themselves in relation to the challenges and opportunities; one key point that emerged from this was the widely recognised imperative that libraries need to align closely with their parent institution. It was recognised that the drive for alignment might result in quite different sorts of library organisations and services across the sector, reflecting the different characters of their institutions. Nevertheless, major variations in current priorities between libraries in different institution types did not emerge clearly in our findings.

There was wide agreement amongst our interviewees that the drive towards alignment should not make the library merely reactive – libraries should also provide leadership within their institutions. We go on to propose a multi-faceted view of alignment involving three major approaches. All are styles of alignment that differ significantly from one another:

- **service-provider** – delivering key services and support activities required by users in line with institutional requirements, often at scale
- **partner** – working alongside users and other professional services organisations, often through projects or embedded working
- **leader** – innovating in new areas, persuading key stakeholders of the way forward and contributing to overall institutional strategy, creating and communicating a compelling vision

All three are important and need to be balanced in the way the library positions itself in the institution.

Communicating and changing

Library professionals are overwhelmingly optimistic about the future and positive about the value of their skills. At the same time, our data showed that there was an expectation in the profession that there may be fewer library jobs in the future and the skills required will change. However, optimism about the future of libraries was not always shared by participants from outside libraries. With such dichotomous views, it seems that perhaps either library professionals are overly optimistic about the future of libraries; or there is misunderstanding among those outside the library about its role; or perhaps both.

It is clear that there is disagreement about what a library is and does, with some non-library-based participants in our study thinking of the library in very traditional ways. Senior managers and students were believed not always to understand the role or potential of the library. There is clearly a need for libraries to communicate their current and future role better. This is, of course, partly about credibility and influence at senior levels in the institution, but it actually concerns staff at all levels. There is a need to create and communicate a compelling vision of the library's current and future role in the institution.

Our participants were also clear that there is a need for libraries and library professionals to adapt. Developing an organisation with the right skills base is a crucial part of securing change. Our survey identified a range of skills which participants regarded as important. Interestingly, those skills that are said to be of critical importance are what might be labelled 'softer' skills, such as in strategy, relationship management and negotiation, rather than 'technical' skills. There was also an awareness among participants that sometimes there may be resistance to change and a certain defensiveness in libraries, which need to be overcome.

Libraries can build on existing strong consortial and partnership networks. Such partnerships can be used to address major challenges such as the preservation of non-print materials – something that was seen as a massive challenge. Multi-professional collaborations within the library and partnerships beyond it are also seen as crucial. However, one of the key challenges that becomes apparent here is that there needs to be a balance struck between collaboration and competition with other professional groups – a kind of 'cooperation'. Libraries need to work out how they can stake a claim on developing services in new areas and equally how they can best assert why they (rather than any other department) should carry on providing existing services.

Questioning old 'mantras', building new paradigms

One way of confronting change is to question received wisdom. We present some of this taken-for-granted knowledge as library 'mantras'. We propose such traditional 'mantras' should be questioned as part of libraries challenging themselves to respond to the rapidly changing environment in which they operate. The mantras include 'the library is a strong

brand', 'the library is neutral', 'the library is trusted', 'library spaces are unique' and 'the library provides for discovery of information'. All of these are problematic and might usefully be questioned and redefined.

At the same time, we suggest further development of thought-provoking and generative concepts or paradigms that have helped and could help to define (but not determine) library thinking about the future. Some of these paradigms are already well established in the thought and practices of librarians, but merit further development: the hybrid library, the inside-out library, the library in the life of the user, the library as platform and the library as infrastructure. To these we add: the computational library, the service-oriented library, the library as digital third space, the globalised library and the boundaryless library. These paradigms are useful prompts for thinking about different types of future.

Developing the role of SCONUL

In the context of fundamental changes in the nature and role of libraries, organisations like SCONUL were seen by many as having an important role. They could help to create spaces for more long-term thinking around transformational change. Case studies of innovative practices, studies of particular user groups, and meetings of libraries across the HE sector were all seen as particularly beneficial.

Conclusions and recommendations

Our report is summarised in the form of fourteen paradoxes with which libraries are currently living and about which there is considerable ongoing debate in terms of their resolutions. These are followed with a set of recommendations for action.

Recommendations for academic libraries

- 1 Work with stakeholders such as user communities and colleagues in other professional groups to undertake more analysis of key trends that affect them and their institutions, especially environmental factors and more long-term issues.
- 2 Set in motion processes, especially consultation with users, to develop more clarity around the print-to-electronic shift and how it is likely to develop over time, in order to inform strategy and policy formulation.

- 3 Investigate the possibilities of developing collaborations to create meaningful online scholarly venues to complement library physical spaces.
- 4 Review local responses to the shift from collections to services in order to position the library effectively in the institution.
- 5 Examine the implications of the 'inside-out' library and its relative prioritisation over time against 'outside-in' functions.
- 6 Review the library's role in discovery, in particular developing ways of surfacing library content in network discovery tools and developing services using new discovery and analytical approaches, such as text- and data-mining (TDM).
- 7 Carry out more work on examining the significance of key developments such artificial intelligence, machine learning, internet of things, digital humanities and other areas of datafied scholarship, and begin to develop services in these areas.
- 8 Consider how best to achieve the roles of service-provider, partner and leader, and get the emphasis right between them in the institutional context.
- 9 Debate the meaning of the ten paradigms that envision what libraries can be in the institutional context.
- 10 Consider how a compelling vision of the library can be created for communication to the wider institution.
- 11 Create opportunities for high-risk innovation and longer-term thinking.
- 12 Investigate how cultures fostering flexibility and innovation can be encouraged in libraries without undermining necessary established processes and routines.
- 13 Develop ways of making the preservation of born-digital materials one of the major priorities of the library community, considering the appropriate level for activity (institutional, regional, national or international) and how these can be coordinated.
- 14 Consider the balance between collaboration and competition with other institutional professional services departments as well as external providers in relation to new and existing services.

- 15 Focus on developing clear messages about the value the library adds in providing particular services to the institution, and ensure library staff are equipped to communicate these messages.
- 16 Review the library's current staff skills base in the light of these recommendations.

Recommendations for SCONUL

- 1 Promote further discussion of the current report.
- 2 Work with other partners to harness expertise and capacity for horizon scanning.
- 3 Promote greater understanding of trends whose implications for libraries appear to be less well understood, such as artificial intelligence, machine learning, TDM or wider environmental trends.
- 4 Host more discussion around potential end-points arising from the complex nexuses of change, the validity of the five mantras and the implications of the 10 paradigms defined in this report.
- 5 Promote more discussion around key issues such as the role of library space, the balance of print and electronic and the balance of collections and services.
- 6 Host more discussion around how, given the need to align to institutional priorities and different styles of alignment (service-provider, partner and leader), different types of academic library might respond in different ways to current changes.
- 7 Promote the sharing of best practice in (a) explaining the changing nature of the role of the library to stakeholders; and (b) managing disruptive change.
- 8 Review skills required for the further development of the role of libraries in the sector and analyse training and recruitment patterns to ensure libraries are future-ready.
- 9 Promote and facilitate the interaction of the SCONUL community with other key communities among internal and external stakeholders (e.g. estates, IT and publishers) and involve user communities.
- 10 Work to create more opportunities for more collective long-term thinking.

- 11 Sponsor the creation and discussion of case studies of new practices (including from outside the UK).
- 12 Sponsor research on trends in behaviours, e.g. among undergraduates and researchers.

1 Introduction

The library has traditionally been at the heart of the university. But today academic libraries operate within and contribute to a rapidly changing environment. Being aware of what is changing and ensuring that libraries can continue to play a useful role in higher education (HE) is a profound ongoing challenge. This report has been designed to help address that challenge.

Thinking about the future is difficult. Many of the planning processes in HE institutions focus on annual planning rounds, and strategy development often only has a three- or, at most, five-year window. We have, however, tried to set at least some of our remarks here in a ten-year timeframe, but realise this is hazardous. Given the scale of change, we believe such a perspective is essential, but it may take a different type of thinking from what we usually associate with 'strategy'.

Our study was based on a literature review, interviews and a survey (see Appendix 1 for a full description of the method). We engaged with a range of stakeholders, many of them experts in their field, about the future of academic libraries, carrying out interviews of 33 people from both within and beyond the library community, in the UK and abroad (participants are listed in Appendix 2). We also conducted a survey of staff employed at different levels in UK HE libraries (details of the 261 responses are in Appendix 3). Here we report our findings and our analysis of the recent literature on academic libraries (see Appendix 1).

In this report we highlight our key results, but we have not attempted to be exhaustive. We have tried to reflect the constructive but challenging tone of many of our participants. As well as presenting an analysis of the data, we also offer an interpretation of some of the major implications of our findings. We have tried to make our arguments easily identifiable by structuring the report around a set of propositions which are highlighted as sub-headings.

We begin by discussing key trends in the library and information domain and the way in which they are perceived. Our study has identified a large number of trends, many of which are interrelated and whose importance often lies how they combine together. Specifically,

we highlight five major areas in which a nexus of factors is likely to have a significant impact on libraries (defined in detail in section 2: 'datafied' scholarship, connected learning, service-oriented libraries, blurred identities and intensified contextual pressures). We discuss understandings of these developments in libraries (section 3), including important continuities in library thinking and what we believe may be gaps in libraries' current engagement with these issues.

We go on to discuss the issue of the positioning of libraries to respond to current challenges and opportunities (section 4), proposing a multi-faceted approach to the issue of alignment between the library and its parent institution. We then discuss (in section 5) the need for communication between the library and the institution as a whole. Understanding of the role of the contemporary library by stakeholders outside the library is often hazy; libraries need to do more to articulate that role. At the same time, there is an ongoing need for change in library organisations. To help achieve this, we propose that a number of 'library mantras' should be questioned (section 6). As a way of thinking about possible futures, we then advance a set of paradigms or visions of libraries and their roles in their institutions and beyond.

We go on to identify some of the possible ways in which the role of SCONUL and similar agencies can be developed to help further support the library community (section 7). Finally (in section 8), to summarise our findings we present a set of paradoxes which reveal many of the tensions that libraries have to address. We then make a set of broad recommendations, for academic libraries in general and SCONUL in particular.

Consideration of our report and its recommendations will need to happen in particular contexts. We realise that although libraries are generally impacted by the same or similar trends, in many ways there is no single future for 'the library'. Libraries differ, just as their user communities and their parent institutions differ. It is likely, therefore, that there may be various *futures for libraries* (both plural). A key part of these futures relate to the ways in which libraries are able to support their user communities and further the mission of their host institutions.

We hope our report will help the library community in the UK and beyond to think realistically and creatively about mapping the future of academic libraries. If our report gives rise to discussion, debate and reflection and stimulates further in-depth research, then we shall have been successful.

2 Identifying the trends

There is awareness of a large number of inter-related trends impacting libraries but little agreement on what is most important

Through our literature review and our own data collection we have identified a large number of trends impacting libraries. These include wider political, economic, social, legal and environmental trends, technology trends, and educational and library-specific trends. Technology trends, although attracting a lot of attention, were rarely seen by participants in our study as decisive in themselves. This is an important point – as Dempsey (2012) observes, ‘changes in research and learning behaviors and expectations are more important for the academic library than any library technology changes per se. Similarly, how networking reshapes library organization, collaboration, and scope will have more impact in the medium term than any particular local technology adoption.’

Our interviewee participants talked about a wide range of trends, and in our survey we listed some of these and asked respondents to assess their importance. The integrated results present a complex picture. There was some agreement on key trends, which included open access, changing learning and teaching practices and the political environment (such as concerns in the UK around Brexit, the Research Excellence Framework and the Teaching Excellence Framework). However, many trends were highlighted and there was no consensus on what is most important. Nearly all trends we listed in our survey were considered transformational by some, if only a minority in every case (Figure 1).

The complexity of the situation was highlighted by a number of our interviewees, many of whom felt unable to pick out a small number of trends as being particularly important:

Well I couldn't get down to two or three... I always start by thinking about what is going on in teaching in my own institution, what is going on in research, and then I can't help thinking about technology and changing student behaviour and rising costs... but more and more I find it really difficult to work out what to put my attention to, what is most important – there are so many things competing for attention. (Library manager)

Key trends: What impact, if any, will the following have on your institution's library in the next 10 years?

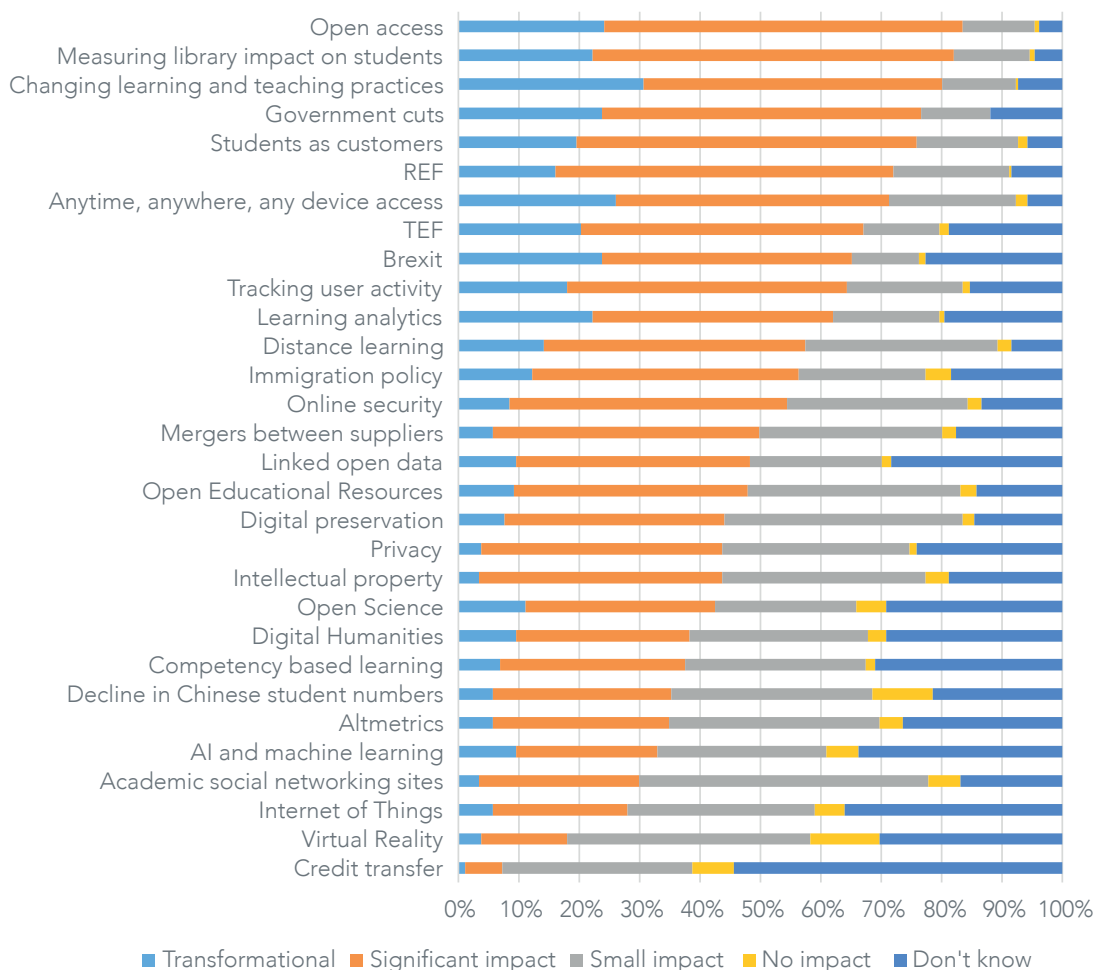


Figure 1: Key trends and their potential impact

Having discussed a large number of trends, one participant summarised what was important as:

... all those things and all those things coming together. (Library commentator)

Some trends were seen as contextual factors which there was no choice but to accept; others were ones that libraries actively shaped and used within their institution.

It is often a nexus of different trends that brings significant change

We suggest that it is often a nexus of different factors rather than individual trends that is most likely to bring significant change. Here we discuss five such nexuses emerging from our

analysis of our data and the literature as key developments of potentially transformational importance for libraries. Our identification of the coalescence of different trends into nexuses is not in any way definitive; it should not be seen as a way of trying to fix them in static positions – they remain dynamic and continually changing. It is, however, hoped that this articulation of them will be a useful framework for discussion. In each case, some aspects of the trends have been with us for a number of years, yet the end-point for their evolution remains unclear. The nexuses are:

- Datafied scholarship
- Connected learning
- Service-oriented libraries
- Blurred identities
- Intensified contextual pressures

Nexus 1: Datafied scholarship

This is a combination of various trends, including open access (OA), open science, TDM, artificial intelligence and machine learning, the internet of things, digital humanities and academic social networking services (Wisskirchen et al. 2017; Asseo et al. 2016; Gartner 2016a). This nexus encapsulates a set of developments that are likely to lead to a situation where research in all disciplines becomes increasingly underpinned by larger and more complex sets of data (Kitchin 2014; Borgman 2015) and digital artefacts, and where research outputs, which take a wide range of forms (text, data, visualisations, simulations, etc.), are made open by default and available to be automatically crawled, mined and then surfaced in various personalised ways using continually adapting algorithms operating at a network level (Priem 2013; Neylon 2013; Boulton 2017). We see this as the next step beyond current trends of digital scholarship. Gartner reports that ‘artificial intelligence and machine learning have reached a critical tipping point and will increasingly augment and extend virtually every technology enabled service, thing or application’ (Gartner 2016a). Scholarly networks are no exception; in fact, they are particularly suitable for this kind of development, with increasing willingness amongst researchers, publishers, librarians and others to operate with greater openness on a globalised scale.

Such a networked datafied system creates a whole new set of ways in which research is conducted and shared, and introduces potentially massive challenges for libraries (Adams Becker et al. 2017). HE libraries are historically geared to dealing with 'publications' as distinct objects (physical or digital) made discoverable via institutional systems populated with hand-crafted metadata and made available to institutional users. Much of this approach is likely to be superseded in the new world. However, there are new opportunities. HE libraries have already become involved in some aspects of this new environment, for example in promoting OA, setting up publishing services, developing research data management policies and running repositories (ACRL 2016; ACRL 2017). Nevertheless, these developments are likely to be very early manifestations of a much more transformational change.

Nexus 2: Connected learning

This nexus combines trends around changing pedagogies, learning analytics, students as customers, social media and mobile computing (Davies et al. 2017; Cooke et al. 2015; Craig & Williams 2015; Adams Becker et al. 2017). It includes pedagogies such as social constructivism and connectivism, the implications of which have not been fully worked through, although these pedagogies have been around for a while (Sjøberg 2010; Dunaway 2011). Learning is increasingly seen as social and more intensively technology-enabled; teaching becomes more of a process of facilitation and involves blended delivery of content. In this environment, developments in areas such as augmented and virtual reality (A/VR) and haptic interfaces are likely to become more important in teaching and learning (Nagel 2016; Gartner 2016b). In addition, key parts of this nexus are students from a wide range of countries, as 'customers' of universities, having the expectation of gaining access to learning resources where and when they want, and pursuing the programmes of learning more flexibly.

Libraries have, of course, already begun responding to these trends in varying ways for a number of years, including launching social media services, expanding information / digital literacy support and developing new physical 'learning commons' spaces, available 24x7x365 (Lippincott 2015; Connaway & Faniel 2014; Matthews & Walton 2016). The current interest in 'maker spaces' is a recent and positive manifestation of this nexus (Curry 2017), an

instance of the library as a platform (Weinberger 2012). But such trends are already taking at least some higher education institutions (HEIs) and their libraries further. Some institutions, including a small number from the UK, are redeveloping their campuses around a far more fluid approach to teaching and learning, part of which involves elimination of buildings owned by different departments and services, including the library (Grove 2017). The more common development of library services sharing spaces with other teaching and learning activities and services, although less radical, is part of this trend. Other developments, such as libraries being entirely virtualised by new private providers in the HE domain, delivering highly flexible virtual or blended programmes, are potentially disruptive in library futures. The far-reaching consequences of such developments are still to be worked through for library services.

Nexus 3: Service-oriented libraries

Closely connected with these developments in research and learning is the nexus of factors around libraries shifting from emphasis on the collection to emphasis on a range of services (in which the collection itself is just one of a number of services) (Attis & Koproske 2013). With the ubiquity of information resources available in digital form, many of them outside the scope of libraries to deliver, the days of libraries basing their claim to unique value on the size of their physical collections are going, if not already gone. Libraries are, however, recognising a need to shift focus to 'the contributions they make in support of instruction and learning, and in the case of research universities, in support of research' (Wolff & Schonfeld 2017). As the centrality of the collection has faded, librarians have been dynamic in creating new types of service to support changing practices in research, teaching and learning. However, this in itself erodes understanding of what libraries stand for. There is still a lack of clarity about what a large-scale and coherent library offering in this service-focused environment should look like.

An increasingly important fusion of the traditional collection management focus and the newer service orientation of libraries is the role of libraries curating content created within their institutions and making it available to a wider audience (the 'inside-out' library) (Dempsey et al. 2014; Dempsey 2016), but the extent to which this is relevant for all libraries is likely to vary. Ambitious plans set out in the MIT report develop this vision:

'When the library operates as an open global platform, scholars can easily elect to share any part of their research process – selectively with colleagues and collaborators, or widely with the world. The open platform we envision would allow sharing of the full range of objects and outputs associated with the process of research (e.g., formal publications, data, methodologies and protocols, software that encapsulates methods and analysis, and even results of “failed” experiments). Such sharing would benefit global scholarship, accelerate discovery and accumulation of new knowledge, and provide unprecedented worldwide access to research' (MIT 2016). Such developments have enormous potential but also create significant challenges, not least around infrastructure construction, digital preservation and libraries' capacity to lead.

Such a direction brings to the fore significant issues of sustainability in the management of collections as services. Curation and preservation of the wide range of mostly digital materials mentioned in the MIT vision is a major undertaking. Developing technologies, protocols and skills in these areas will require significant resources and strategic prioritisation – something talked about for a long time but only just beginning to be addressed. This is part of the general question of the balance of collections, both between 'inside' and 'outside' materials and also, of course, between analogue and digital. One of the major current priorities is managing the shift in the balance from print to digital. There is, however, little clarity around how far the shift will go and where it is likely to end.

At the same time, the institutional library's traditional role in discovery of content looks insecure as more and more users turn to commercial network-level discovery systems as the first port of call for information-seeking (Wolff & Schonfeld 2017; Akeroyd 2017). The need for libraries to surface their services in the workflows of users, rather than expecting users to come to libraries, has often been observed but does not yet constitute a concerted or coherent effort by libraries (Dempsey 2012).

Nexus 4: Blurred identities

This is in many respects a set of trends that flow from those already discussed. The dividing lines between the library and other parts of the university are already becoming blurred, and this is likely to continue (Verbaan & Cox 2014; Wolff & Schonfeld 2017; Vassilakaki

& Moniarou-Papaconstantinou 2015; ACRL 2016). What a library is and what a librarian stands for is becoming less clear. This is seen in the library organisation itself (now recruiting more staff from outside the traditional library profession) and in the way the library works with other departments and librarians work in other departments. Libraries now need to collaborate with other departments more closely than they did traditionally in order to design and deliver services.

One of the major challenges associated with this fluidity is that it can no longer be taken for granted that services traditionally provided by the library will necessarily continue to be in the library's remit. Many services currently offered by libraries could be provided by other parties, and there is some evidence around the sector that they sometimes are. These include learning spaces, repositories, OA support, information / digital literacy education, even historic collections. In many cases, other providers could be departments from the same institution, in others they may be outsourced (something that has occurred in libraries in other sectors). At the same time, the library can be dynamic in taking on new roles, as it has been in providing maker spaces or research data services. This expands the library's influence, but may contribute further to a blurring of identities and thus to the lack of clarity about what a library is. Where and 'when' the library is has become less clear, even though many stakeholders' conceptions of libraries remain rather unchanging. The same types of changes (blurring of identities, reconceptualising core services, outsourcing commoditised functions, etc.) are also often happening in other professional departments.

Nexus 5: Intensified contextual pressures

The political, economic and commercial environment have all contributed to a nexus of important trends impacting on higher education institutions in general and their libraries in particular (Grove 2015; UUK 2017c). The globalised economies of most Western countries are now open to a wide range of international shocks, and all continue to be affected by considerable constraints on government expenditure following lengthy periods of slow economic growth. In the UK there are a myriad of other uncertainties created by Brexit (UUK 2017a). Concerns over international student recruitment (on which most HEIs in English-speaking countries are now reliant) are also increasing, especially in the context of changing immigration and visa requirements (Conlon et al. 2017; UUK 2017b). There are funding

challenges for universities, including the balance between government grants and student fees (and other private income) (UUK 2017c). There is increasing competition in the HE provision space, with new private providers coming on stream (Fielden & Middlehurst 2017). In the UK, the national governance framework of HE research and teaching is also changing, as UK Research and Innovation and the Office for Students take over responsibility for research and teaching policy and funding at national levels, replacing, respectively, the Research Councils UK and, in England, the Higher Education Funding Council for England. Rising pressures are associated with the demands of changing policy around, for example, assessment (in the UK the Research Excellence Framework, Teaching Excellence Framework and now the Knowledge Exchange Framework) and compliance (in areas such as OA and data management). All of these create major challenges for universities and their libraries. The NMC Horizon report (Adams Becker et al. 2017) recognises economic and political pressures as one of the main “wicked” challenges that libraries face today.

Important developments are also occurring among commercial service-providers such as publishers and aggregators. There has been further ‘horizontal’ integration in the market as companies merge or are taken over, as well as a newer trend towards ‘vertical’ integration, as publishers take over companies operating in the areas of research collaboration, research assessment, discovery, and so on (Posada & Chen 2017). Scholarly communities have always worked on a global scale, providing a strong base for services such as ResearchGate or Mendeley, rather than institution-based library services. Collaborative effort, including consortial work, remains a necessary response of the library community in order to mirror the scale of its commercial suppliers.

Wider global trends, such as those in the rapidly changing information environment (IFLA 2013), where hyper-connectivity and interactivity are the norm, act as a backdrop to developments in HE. At the same time, ‘mega-trends’, such as those around water, food and energy provision and security, have profound implications for the societies in which universities find themselves and, by extension, the kinds of research and teaching they carry out. Universities as a whole and libraries within them are developing their long-term approaches as this complex, multi-layered, continually changing context creates increasing pressures.

3 Recognising the challenges and opportunities

When we look at how our participants conceive of the library of the future, it looks for many very similar to what exists now

Having said that the participants in our research recognised many of the challenges identified above, emphasised the complexity of the environment and saw many trends as offering potentially transformational change, it is, paradoxically, interesting that many of them nevertheless clearly conceived of libraries of the future as very similar to libraries of today. For example, as Figure 2 illustrates, the results of our survey showed that most library staff believe that the library will continue to be a physical presence and that there will be a separate building called the library. This view arguably shaped responses to many of the other issues we raised in our research.

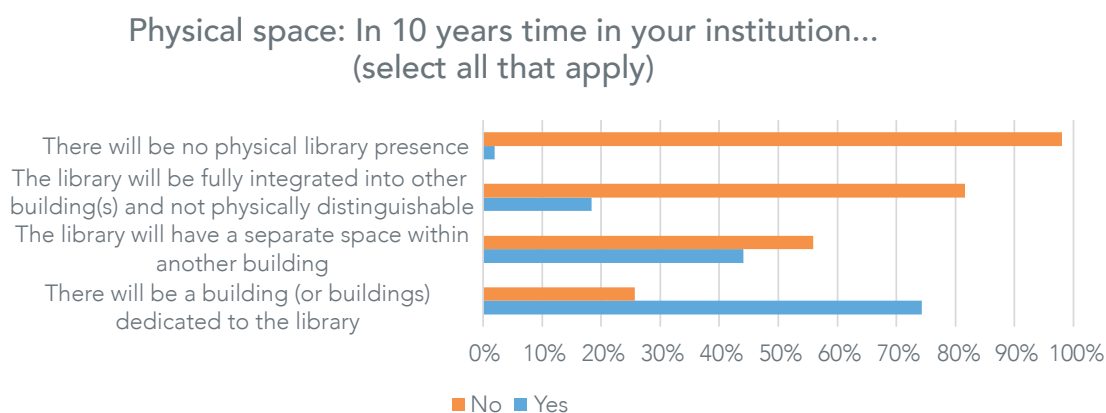


Figure 2: The library as a physical place

As one interviewee put it:

They are still flocking into our buildings. And because that hasn't changed over the last few years, I don't think it is going to change in the future unless something radically different happens. (Library manager)

Another participant observed that this continuity derived at least in part from unchanging fundamental needs of library users:

The actual things that people need libraries for is remarkably persistent. I think that what shifts are the different ways they can be provided... and again just thinking about furniture – the most flexible and effective piece of furniture in a library these days is a big table. And there have been big tables in libraries since there have been libraries. (Library commentator)

As well as continuing to have a physical presence, libraries are seen by many of our participants as continuing to house significant numbers of physical items (Figure 3). Only 30% agreed that 'printed books will be an insignificant part of a collection that is largely digital', whilst 56% disagreed. It is clear that a large proportion of those working in libraries still see the physical collections as defining their library in 10 years' time.

Collections: In 10 years time in your library...

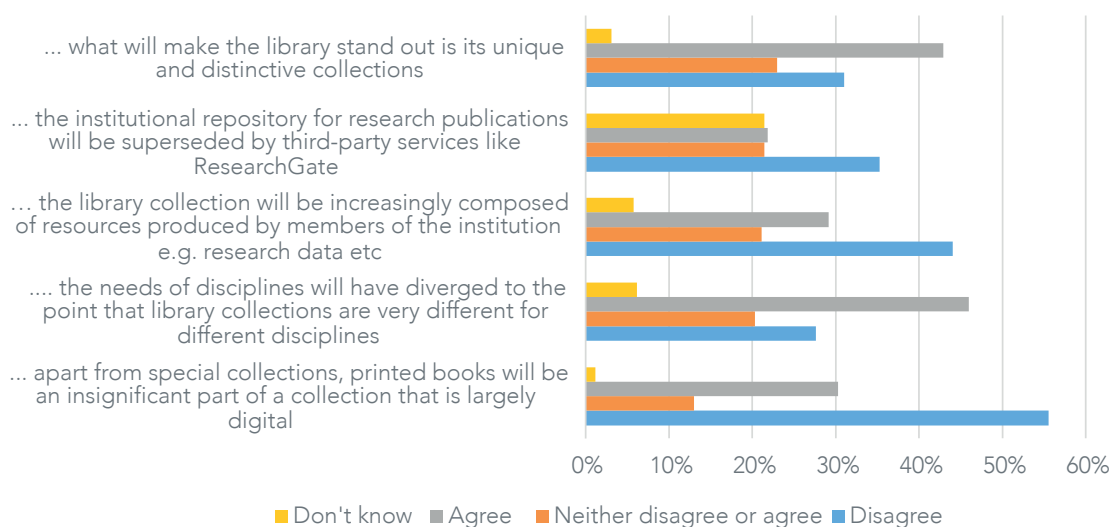


Figure 3: Physical and digital collections

Libraries could usefully work towards greater clarity about the print-to-electronic shift and how it is being strategised and managed

It is obvious that the balance between print and electronic collections is changing in libraries and has been changing for some time, but there seems to be little consensus about when or

where such change will end. Some see the future as predominantly digital, others contend that printed items will remain significant in the long term, be that through special collections or the collection as a whole. For some, at least, it is clear that they see their professional identity and the role of their library service as being intimately connected with the printed book and find it difficult to think of any future without it. For them the library will remain hybrid. Critical of this position, one library manager amongst our interviewees referred to people getting 'all emotional and dewy eyed about... the book', whereas it was just 'a wrapper for information'. Others pointed out library users' close connection with the printed books. It can be argued that print books remain a well-designed format for certain types of reading.

This lack of clarity around the shift in the balance between print and electronic is perhaps also reflected in libraries' strategies and policies. The print-to-electronic shift in libraries clearly needs to be strategised and managed more explicitly, and the extent to which developments will result in a largely digital future needs greater clarity. One of our interviewees hazarded a guess at a future that would stabilise with a collection of about 80:20 in favour of digital items. Interestingly, SCONUL data already showed an expenditure ratio of 73:27 in favour of digital in 2013–14 (SCONUL 2015), although the proportions of digital *items* in the collections is considerably less. Any end-point is likely to vary depending on the nature of the institution and its library, user demands, availability of content, and a whole range of other factors. Precision is likely to be difficult to achieve, but libraries could usefully surface discussion on this issue amongst library staff and their users in order to develop more robust strategies and policies that provide clear direction and a basis for action appropriate to their particular context.

Libraries are yet to create successful virtual 'places' to mirror the physical

Whereas libraries are important places on campus and librarians have been successful in creating inviting spaces for learning, it could also be argued that in the digital world, libraries have failed to create a similarly compelling digital presence, for either learning or research. Library web pages and discovery systems are simply not sticky destinations like academic social networking sites (SNSs). For academic staff, who mostly use the physical library rarely, there is no equivalent venue to the physical library online, only signposting to

disparate resources. The MIT report notes: ‘Current library-provided [online] environments are passive, read-only systems that don’t support the social connections, open commenting / annotation, or other forms of open scholarly conversations that many users desire’ (MIT 2016). One of the issues here is that research communities are meta-institutional, so institution-level efforts work at the wrong scale.

“These social networking sites for scholars,...clearly scholars are feeling a need to not just post their papers online and pull other papers off of line, they feel the need to create some kind of community. I think the libraries again, because...our goal is to advance knowledge and scholarship and ensure that it is available for the future and so forth..., ours isn’t a profit motive, I think that...we would be really smart to become players in that realm, in creating these sort of online communities around the scholarship. I do think it is quite rare, I think that libraries have tried things that haven’t...in terms of creating social interaction through their catalogue, for example, or other things, kind of haven’t gone very far, and so they have sort of retreated...but I hope and I expect that in the next 10 years there will be more different experiments in that realm.” (Library manager)

Attempting to create such environments would fit with wider social and technological trends of ‘digital worlds’ being an ‘increasingly detailed reflection of the physical world’ creating opportunities for similar interactions and collaborations (Gartner 2016a). In the context of the commercial drivers around company-sponsored communities and SNSs, the ability of libraries to create digital third spaces could be important in helping libraries to adapt their role as rich social, spatial, technological infrastructures (Mattern 2014) to the digital context. Yet it would be challenging for individual libraries to do this alone and would require extensive international collaborations in order to work.

Interviewees agreed there is a need for libraries to shift from emphasising collections to emphasising services (or collections as one service)

Whilst there was ambiguity about the nature of the print–electronic balance, many participants were clear that libraries need to move from emphasising collections to emphasising services (or at least, collections as one service amongst others):

[The library] will have to become much more used to providing a diversity of services based on a variety of contractual arrangements. They will have to see their collections as one service among others. (Library commentator)

Another commentator was more assertive in emphasising the starkness of the choices to be made:

Libraries will face an important choice over the next several years as an institution – whether or not they want to continue to build their prestige around the size of their acquisitions budget, in which case their prestige will significantly decline in centrality and importance... or whether they want to position themselves as important to the knowledge-creating task of the university in different ways. (Non-library participant)

There is agreement that the ‘inside-out’ role of libraries needs to be increasingly important

Positioning the library in this way relates closely to the ‘inside-out’ role, often seen as increasingly important. This idea has been articulated in detail by Lorcan Dempsey in particular, who emphasises the library’s involvement in both the ‘process’ and ‘products’ of research and learning. In this approach, ‘Libraries increasingly support the creation, curation and discoverability of institutional creations (research data, preprints, scholarly profiles, academic profiles, digitized special collections...),’ so that the university can share them more widely (Dempsey 2016). Participants recognised this role as an increasingly important part of the library’s remit, and it is illustrated in the sector by, for example, the growth of open-access institutional repositories for managing research publications produced by members of the HEI, and, more recently, archives and catalogues for institutionally created datasets. These developments focus on the management of the ‘products’. Many of our participants supported such moves:

It seems to me that there is going to be a role in many universities for the library to become the place from which a lot of university information is disseminated, and that seems to be to be a good thing. (Non-library participant)

Libraries have also become involved in the 'process' of research and learning, as is evidenced by their increasing support of the scholarly communication process and the development of research data management policy. There is undoubtedly potential for such support roles to be widely increased, and some of our participants called for this:

So, then, they have a role of helping us as academics to get our work to reach the right people and for it to become more discoverable, to be cited more often, and that is a very different role for a librarian and one that we are sadly lacking at [name of university]. (Non-library participant)

However, there is also the challenge of user acceptance of this as a role of the library. There is a danger that it may at times be seen as intrusive in the life of the researcher (library-led research data management being an example), and so needs to be managed carefully in order for it to be seen as facilitating rather than constraining.

But the 'inside-out' role will not replace the 'outside-in' role

Although such a role may be seen as increasingly important, our participants (like Dempsey) did not see the 'inside-out' as replacing the established 'outside-in' role of libraries of selecting externally produced resources and making them available to their institutional users. One non-library participant emphasised the ongoing role of the library of providing access to licensed resources:

The library... still plays a curatorial role in the sense that we are not in an open-access world, so what journals your university subscribes to is relevant... (Non-library participant)

One other participant suggested that whilst the 'inside-out' role will become important for research libraries, in teaching-led institutions the opportunities for managing internally generated content would be more limited:

I believe that research libraries in particular are going to pay a lot more attention to local assets. But you know I don't buy that they are going to get out of the other role. Non-research libraries mostly don't have any content to curate, except for teaching and learning materials. (Library commentator)

Libraries are therefore seen as needing to balance the 'outside-in' and 'inside-out' roles, albeit in different combinations for the foreseeable future.

Participants thought the library's role in discovery in a networked world needs greater clarification and focus

Many participants did, however, agree that the traditional role of the library in discovery of resources in a networked world needs greater clarification and focus. The library's role in discovery, delivered primarily through its catalogue(s), looks increasingly insecure. Library moves into supporting discovery of networked digital resources have not attracted anywhere near the same numbers of users as the publicly available network-level discovery systems, particularly Google Scholar. While the value of library catalogues for finding printed items and physical building are largely undisputed, their value in discovering digital resources beyond the four walls of the library is still unproven. One library manager drew comparisons between the library systems and Sci-Hub, reporting that research they had carried out showed that users often preferred the latter because 'the interface is so much easier'. Other participants who were themselves academics commented that they made extensive use of Google Scholar and little use of the library catalogue. One participant described the situation in robust terms:

[The library says:] 'Come to us, we are better than Google, don't just use Google, don't just use Google Scholar, we have got better systems.' No, your systems are crap. We are all using Google Scholar. (Library commentator)

The value of libraries attempting in some way to compete with such network-level discovery services (something often implicit in library approaches) seemed doubtful. Greater emphasis should perhaps be placed on designing library services that surfaced content in the places where users actually are rather than where libraries would like them to be, sometimes called 'the library in the life of the user' (Dempsey 2016; Connaway 2015):

The shift is going from captive discovery tools to improving discoverability of library resources and the channels that the student and researcher are already in. So that might be in learning management system, it might be on Google Scholar, it might be in disciplinary portals... wherever the researchers are, that's where libraries need to focus their intellectual effort and improve discoverability. (Library commentator)

Of course, library services have also traditionally been provided by staff with expertise in finding material that may be based on their knowledge of given subjects. The value of this for the future, however, is also doubted by some:

*Am I going to rely on my librarian who has got stuff in his or her head or am I going to rely on machine learning which can go through 100 million PDFs in a second?
(Non-library participant)*

Although such a dichotomous choice may not be always necessary, this comment does perhaps point to a future where one of the key contributions that information professionals are likely to make is not so much about having 'stuff in their heads', but having expertise in the use of tools to support users in navigating resources at network level, including expertise in new areas of discovery and analysis, such as TDM.

Apparent gaps in awareness about certain key trends need to be addressed

The observations in the previous section raise the question of new library roles in network-level discovery in an increasingly 'datafied' context. There is significant potential for libraries in new areas of discovery such as data catalogues and provision of TDM services (Adams Becker et al. 2017). The computational library is one possible library future. However, we saw only limited evidence of libraries engaging with these areas and considering where they might play a role. Figure 1 suggests that they are quite low in librarians' awareness.

The lack of extensive engagement in these areas is perhaps evidence of a wider problem. We suggest that there are some key trends where libraries could engage more in order to develop an understanding of the implications. These include artificial intelligence and machine learning, which are likely to be at the heart of the 'datafied' networked research environment of the future and have the potential in many ways to replace the well-established methods of dissemination and discovery in the current environment. Discussion of the implications of such developments has only just begun to enter the library professional discourse. There needs to be a great deal more discussion focusing on this rapidly changing area and its implications for library services. Learning analytics represent the equivalent in the realm of learning and teaching.

We also suggest engagement could be usefully stepped up with developments such as digital humanities and academic SNSs. Both often happen beyond the library, so their implications for the library are often not well understood. Perhaps the most prominent SNS, ResearchGate (RG), for example, now dwarfs institutional repositories in terms of its role in making copies of publications available openly on the web. Significantly, the strategy of organisations which run many academic SNSs is for their products to replace at least some of the functions currently delivered by libraries. The growth of such services has happened partly because they are not constrained by HE institutional policies and the caution that often entails, and so it is interesting that RG has recently been challenged by some major publishers on its approach to copyright, although other major publishers have at the same time announced a strategic partnership with RG (Hinchliffe 2017).

We also detected in the interviews a relative lack of a sense of connection to global trends such as those in the information environment (IFLA 2013) and the big global challenges of our time, such as those around water, food and energy. Focused on the immediate complex changing environment, big questions about the fundamental sustainability of current models were not being asked.

The view was expressed that the library profession would benefit from being more outward-looking

In some answers to the questionnaire, librarians expressed the belief that libraries were excellent at collaboration, particularly within the institution (see Figure 4 below). It is interesting that collaboration and liaison across the profession were seen by participants as being important; however, they were regarded as less so beyond professional boundaries (see Figure 9 below). We saw hints of danger that the library profession is too insular, with insufficient collaboration with other professional groups. One library commentator referred to their 'isolation... from the larger systems that libraries are embedded in'. One non-library participant described libraries as being 'isolated' from other professional groups. In contrast, one interviewee emphasised the importance of interaction with other professional groups and providers:

Libraries are not alone. There are a lot of stakeholders. University libraries and publishers have fragile relationships, but they should be working together. They are threatened by the same thing. Why aren't universities working with publishers? Publishers have a vested interest in libraries. Libraries should talk to publishers. Newspapers disintegrated in the digital transition. Learn from them! (Library commentator)

There is, some of our participants thought, a focus on incremental rather than disruptive change, and a lack of truly innovative thinking in libraries. One library manager said that libraries tend to 'think in the box' and a library commentator asserted libraries are 'more conservative' than they should be. In relation to disruptive innovation, another library manager commented that libraries tend to focus on small-scale improvements rather than large-scale changes:

I think we are thinking about it, but again, we have been sort of stuck at 'Can we replace the reference desk with the chat bot?' And they have been stuck in that realm instead of thinking about it in terms of being stewards of the scholarly record, and that should be fed into machine-learning algorithms... (Library manager)

One library manager suggested that libraries should design their organisations and processes in order to encourage innovation far more deliberately, making 'the library a learning, adaptive and responsive organisation'.

Thinking long-term is an important part of recognising current challenges

The value of thinking long term was expressed by some of our participants. At the same time, it was felt that library professionals in institutions are constrained by their local planning horizons, which may make them rather present-oriented. There was also some evidence that in a rapidly changing world, participants were reluctant to think too far ahead. Library managers agreed that they were normally expected to work within relatively short timeframes, certainly no more than 3–5 years. Some library commentators felt that this was sensible in a rapidly changing environment. Concerns were expressed that there was a danger in thinking long term and implementing changes at least some of which may prove to be mistakes. Innovation inevitably involves risk-taking, which sometimes means making

mistakes. The extent to which such failures would be tolerated in many institutions was doubted. What is clear, however, is that many innovators beyond libraries are thinking much further ahead:

I personally tend to really enjoy looking at the world 10–30 years from now and thinking about what we can do right now that will steer that in the most exciting direction. (Non-library participant)

There are contrasting attitudes to the claim that libraries are being ‘McDonaldised’

Underlying many of the management challenges spoken about by participants were concerns about issues such as performance indicators, demonstrating value for money and engendering a ‘businesslike’ approach. Many of our participants took such factors for granted as characteristics of the current HE environment. In some respects, such developments were seen as positive, resulting in, for example, genuine improvements to libraries’ user and service orientation. However, there was also some uneasiness about them.

They could be seen as examples of so-called ‘McDonaldisation’ of academic libraries (Nicholson 2015), whereby library services are commodified and dominated by managerialism. In the HE sector in general, it is claimed by many critical commentators that for several decades universities have been managed more and more like the private sector, a trend often labelled as the ‘new public management’ (Olssen & Peters 2005), or neo-liberalisation. A variety of discourses apparently becoming increasingly dominant in universities are part of this, including a stress on competition, treating students as customers, employability as the main outcome of education, metricisation of performance, all linked to a decline in status and autonomy of the increasingly precarious academic. While participants did not conceive of the issue in quite these terms, it was apparent that in all cases it created ongoing challenges:

It is very easy – this term private sector gets thrown into many conversations and I don’t quite know what it means. Let me unpick: ‘Should libraries be concerned with their users (i.e. their customers)? Of course they should. Should libraries be changing to make themselves relevant, in the 21st century? 100%, no question.

Should libraries be looking at the way they do things so as to be able to climb the twin peaks of efficiency and effectiveness? Absolutely. If that means they have got to be like the private sector, then that seems to me to be a good thing, but equally I would hope that all universities and all classes of universities operated in that way. (Non-library participant)

If by more like the private sector you mean far more cost constrained and driven by profit and such like, then perhaps there is a pressure, because it is very difficult not to diminish service in one way or another if you reduce costs... We do run quite a business-minded service here... Well I think if you have got values that don't take account of your corporate environment, then you need to be realigned with your organisation somehow. If you had been asking that question maybe 15–20 years ago, perhaps people would be more precious about it. I have long given up being precious about it because the reality is that it is just not like that anymore... and I am not bumbling around in my tweed suit with my pipe if you know what I mean. In my university, it is just not like that. (Library manager)

But we did not find that a commodified discourse around the role of libraries was the only or even the dominant way of talking about libraries. Libraries did not see students solely as customers or accept uncritically the trend to metricisation. Many core library values such as free and equal access to information and dedication to critical appraisal of such information make libraries plausible centres for third-place thinking as well as hubs for information / digital literacy. Libraries, it seems, are often finding some kind of accommodation between competing pressures of McDonaldisation on the one hand and public service values and ideals of academic autonomy on the other.

4 Positioning the library

There was widespread agreement that libraries need to align closely with their institution

One of the issues that came out most strongly in our research was the need for the library to align closely with its parent institution. This was seen as a means of strengthening the library's position and of delivering the best services for its user communities. It was thought to be essential that the library reflects the priorities of its host institution, and any misalignment was seen by our participants as being negative for both the library and the institution:

Fundamentally, the library should first and foremost absolutely be supporting and serving the institution – that is its job, so anything that affects... the way academics are conducting research, the way students are coming into the university and the way they are being taught – all this should affect the library, and if it doesn't, the library isn't doing its [job]. (Library manager)

I think if the [library] director is pursuing a strategy that isn't supported by their institution they probably ought to come up with a different strategy. (Library manager)

You don't have libraries that stand on their own and change over time, like independent businesses. Libraries are part of institutions, and those institutions are going to change. The most important thing that will affect the library is what the institution requires of it. (Library commentator)

It was recognised that the drive for alignment might result in quite different sorts of library organisations and services across the sector, reflecting the different characters of their institutions:

If I am in an institution, a university that is really specialising on career-based learning, I am going to have a very different library than if I am in an institution that is an elite research institution that wants to participate in international circuits of scholarship and so on. (Library commentator)

Major differences in priorities between institution types did not emerge in the data

Interestingly, however, major variations in current priorities between libraries in different institution types did not emerge clearly in our findings. In our survey, for example, only small (and weakly statistically significant) differences in services were emphasised as being important by libraries based in teaching-led institutions compared with those based in research-led institutions. Predictably, the former tended to emphasise the importance of the library's provision of services such as 'academic literacy / study skills', and the latter 'research data management', but the levels of differentiation were small.

There was also some evidence that despite the emphasis on the importance of alignment, some of those working in libraries did not recognise the importance for the institution of the increasingly competitive international environment around recruitment, for example.

Nevertheless, participants did not just emphasise the need for alignment, but also stressed the importance of *demonstrating* it.

We spend a considerable amount of time making sure that our strategy matches the aspirations of the institution. (Library manager)

Libraries should not be merely reactive – they have the ability to provide leadership in key areas in their institutions

However, there was also wide agreement amongst our interviewees that the drive towards alignment should not make the library merely reactive – libraries should also provide leadership within their institutions.

It is about that balance of aligning with institutional objectives and creating a library service that is innovating and right for today's age... (Non-library participant)

I think you can see libraries that have been successful where library directors have adopted that sort of entrepreneurial mindset and have persuaded the institution of the direction. They have brought the institution along with them, they haven't been doing stuff on the side and hoping that the institution will notice. (Library commentator)

But it is not just up to librarians to respond – I think librarians need to be driving and pushing these external factors along. I think we need to be stepping up and making educators, researchers and students want to work in different ways and offering them different ways in which they can work. I don't think we should be passive about this, because never mind ten years – in six months something could change... but we really need to be on the front foot. (Library manager)

Libraries can lead by working beyond what users say they want and identifying new opportunities for service development and innovation. We suggest that this requires libraries to work beyond the traditional 3–5 year planning timeframe, and that in a sense therefore there must be something beyond strategy and alignment as normally conceived – longer term, more visionary.

The NMC Horizon Report for libraries (Adams Becker et al. 2017) identifies one of the two main “wicked” challenges facing academic libraries as ‘embracing the need for radical change’. This suggests the need for libraries to develop ways to experiment with innovative, risky ideas.

We propose that libraries need to position themselves in different styles of alignment in different contexts: service-provider, partner and leader

Underlying the comments of many of the participants were in fact three major types of roles carried out by libraries. All are styles of alignment, but significantly different ones. The library has to carry out all of them, in different combinations for different stakeholders at different times:

- **Service-provider:** delivering key services and support activities required by users in line with institutional requirements, often at scale
- **Partner:** working alongside users and other professional services organisations, often through projects or embedded working
- **Leader:** innovating in new areas, persuading key stakeholders of the way forward and contributing to overall institutional strategy, creating and communicating a compelling vision

All these roles are important. The way in which they are carried out and in what combination will depend on a wide variety of factors, not least the type of institution within which the library resides. The balance between the different roles will also vary. The role of service-provider supporting a wide variety of users often involves the large-scale services that are basic to library provision. Partnering, on the other hand, may be more tailored to particular needs. Leadership needs to occur at every level and requires vision and influencing skills. Some activities may change over time as new ideas are generated in leadership roles, developed in partnership with users and then transformed into production services to be run at scale. Generally speaking, libraries can only lead effectively if they are credible service-providers and reliable partners.

Libraries can usefully reflect on the extent to which they perform each of these three major roles effectively, whether their capacity in any of the roles is currently constrained, and whether they have got the balance between them right for their context.

5 Communicating and changing

Library professionals are positive about future and about the value of their skills

It is encouraging that our data shows that library professionals are overwhelmingly optimistic about the future and positive about the value of their skills. As Figure 4 illustrates, the majority of survey respondents believed that 'libraries have an exciting future', that the role of libraries was 'core to higher education'. The values and skills of library professionals will, it is believed, still be relevant in the future (Figure 5). A number of our interviewees agreed – one, for example, stating:

I think there will be more libraries, and better libraries. I think that we might actually be coming into a bit of a golden age for libraries, a new golden age for libraries.
(Library commentator)

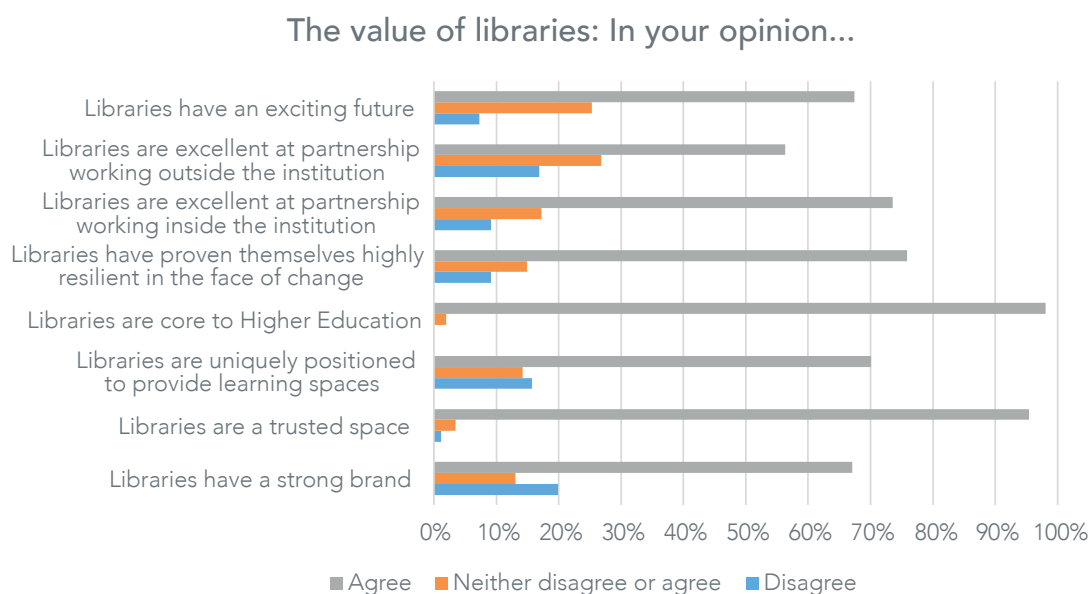


Figure 4: The value of libraries

Despite the optimism, there is a belief that there may be fewer library jobs in future, and the skills required will change

However, despite such optimism, our data showed that there was an expectation in the profession that there may be fewer library jobs in the future and the skills required will change (Figure 5).

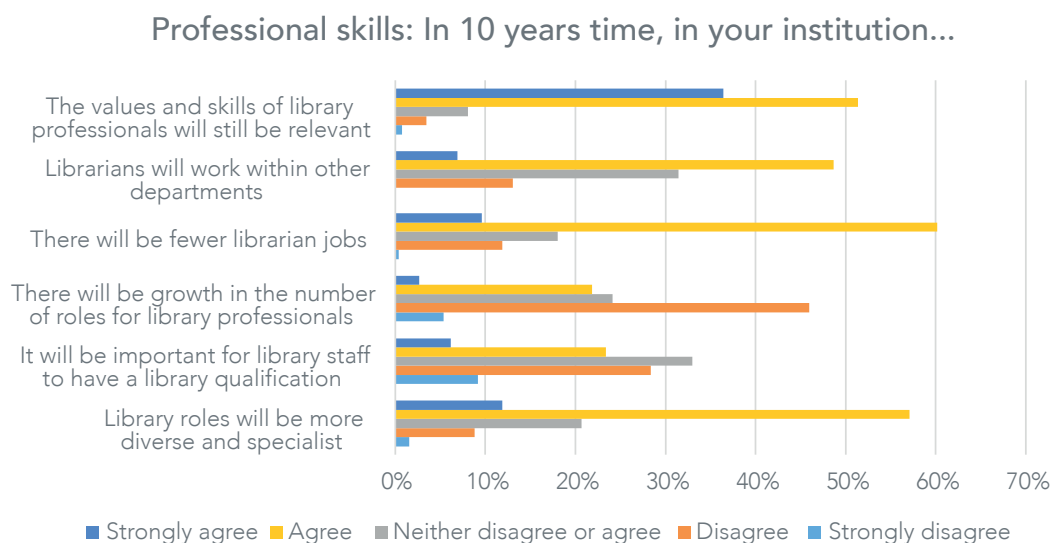


Figure 5: Library professional skills

Such changes are, of course, likely to reflect changes to the library services themselves:

We are in a building full of books and how much the staff structure [is] reflected [in] the fact that people were circulating books and over fines and buying new books etc. If you were in a purely digital library...you will not have that large pool of fairly junior positions doing those day to day tasks.” (Library commentator)

... everything from ordering books to cataloguing books, etc., answering queries – I think software is going to replace people. (Non-library participant)

However, optimism about the future of libraries was not always shared by participants from beyond libraries

Other participants, particularly those not directly associated with libraries, went further, questioning fundamentally optimism about the future of libraries:

I think that the library services themselves will be a more competitive environment. What I guess I am implying is that the library as it is now won't exist – it will consist of a series of services and will itself become unbundled. The physical entities that we call libraries will be part of what you get when you come on campus and it will be part of the proposition. But the digital – who knows whether a library will continue to offer those services, against the competition that it would face in the market? (Non-library participant)

At least one participant saw this possible decline in the role of libraries positively:

In many ways, the library's role as the gatekeeper to academic content on campus is one that I would love to see decline. (Non-library participant)

There is disagreement about what the library is and does

With such dichotomous views, it seems that perhaps either library professionals are overly optimistic about the future of libraries; or there is misunderstanding among those outside the library about the library's role; or perhaps both.

It is undoubtedly the case that some people outside the library profession construe 'the library' in very traditional ways. That was true of our non-library participants – some still seeing libraries primarily as storehouses of books. One participant referred to the word 'library' as an 'old-fashioned term', basically linked to a building. One library manager interviewed recognised this, stating:

The university – they are not aware of what we are doing when we are not a physical building. (Library manager)

It is clear that there is some disagreement about what a library is and does. Survey participants indicated that neither senior institutional managers nor students fully understand the role of libraries, the form in particular. (Figure 6).

Role of libraries: In your institution...

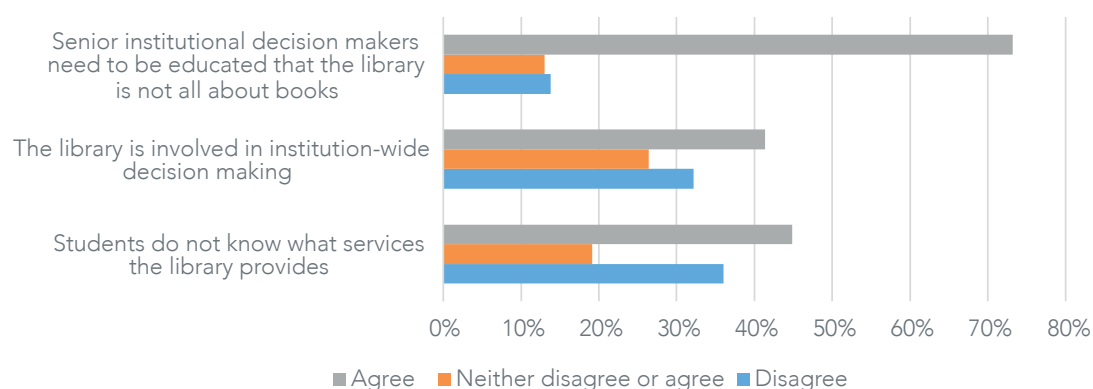


Figure 6: Understanding of the role of libraries

Some of this misunderstanding is almost certainly contributing to perceptions of diminishing relevance of libraries in their institutions.

Participants recognised a need for libraries to communicate their current and future role better

At the very least, one thing this signals strongly is the need for libraries to communicate their current and future role better. Libraries need to develop clear messages about themselves and their role in the institution and ensure these are systematically communicated amongst user communities:

People being wedded to that old model of the library is something that really holds libraries back. And I think we need to think about working with vice-chancellors, working with PVCs for research, teaching, learning and so on... We need to do a lot of work I think with those communities to get people to... be happy about moving away from old legacy models which give us huge unnecessary collection management buildings, storage problems. I think we could deliver a much richer experience from the point of view of the students, the researchers and the academics themselves. We could help them much more if we weren't burdened with a lot of physical legacy problems. I am not saying we will move totally to a digital world, but we could be more flexible and more fleet-of-foot if we could

move away from some of that. But we need to take those people with us. And I think that will be hard to do. (Library manager)

There is clearly a need to create and communicate a compelling vision of the library's current and future role in the institution which can take stakeholders along with the library. Wherever possible, this should be linked to evidence of the value of libraries for individual users, various stakeholder communities and the institution as a whole.

There are key questions about the credibility and influence of the library in institutions

This is, of course, partly about credibility and influence at senior levels in the institution. Some participants reported explicit endorsement of their approaches at executive level in their institution:

I don't move without the buy-in from the people at the top. (Library manager)

However, there was also some sense of what the Ithaka survey report calls, 'a decreasing sense of support from the institution' (Wolff & Schonfeld 2017). Others were sceptical of the influence of the library or even interest in it at executive level:

I sit on the board of my university, and the number of questions and issues that come up relating to the library in terms of a risk or an issue – or, dare I say it, an interest – is hardly any. (Non-library participant)

Such a lack of interest might, of course, be seen as a vote of confidence in the library – that it is doing a good job without the need for intervention. However, it also probably signals a perception of the library as a reliable but fundamentally well understood and unchanging part of campus, rather than anything else.

Participants were clear that there was a need for libraries and library professionals to adapt

As well as communicating their role more effectively, participants in our research also emphasised the need for libraries and library professionals to adapt:

If we keep doing what we have done in the way that we have always done it... we will fall off the map. (Library commentator)

Developing an organisation with the right skills base, through staff development or recruitment or both, is a crucial part of securing change. Our survey identified a range of skills which participants regarded as important (Figure 7). It is interesting that although a number of technical skills are indicated as important, those that are said to be of critical importance are what might be labelled 'softer' skills, such as in strategy, relationship management and negotiation. Emerging areas, such as UX (user experience design) expertise, were also seen as important.

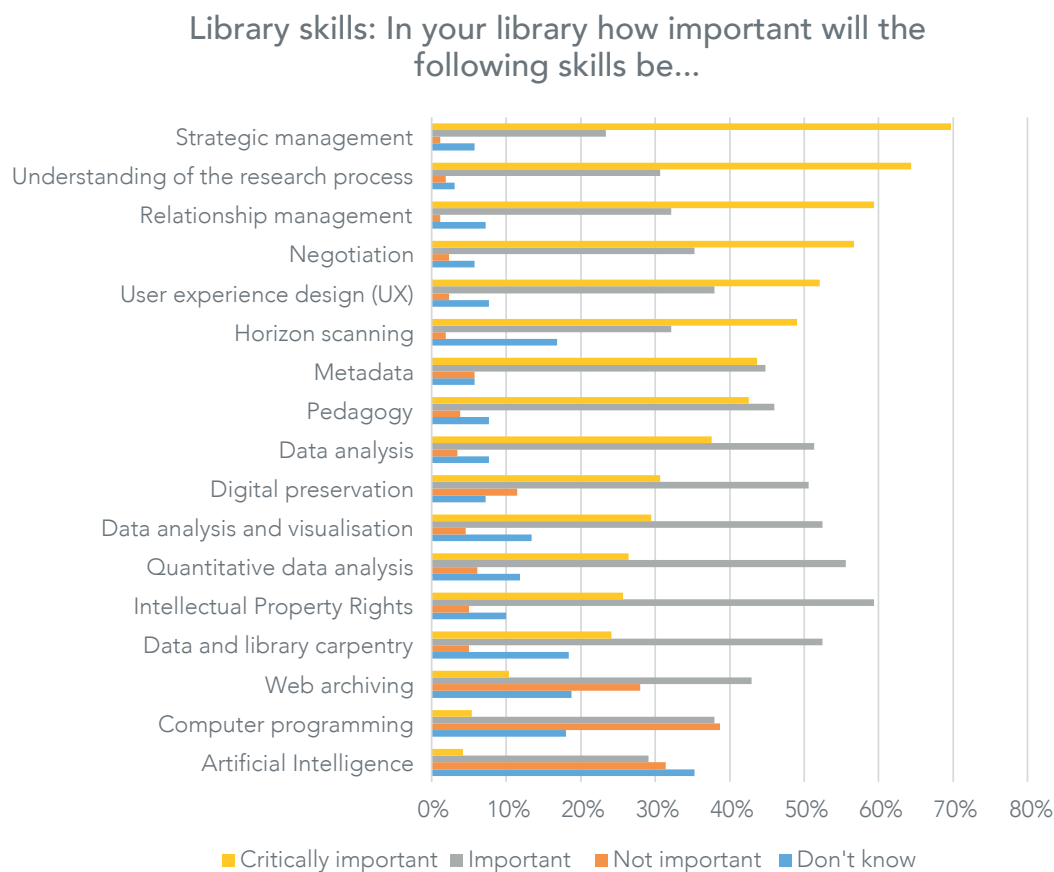


Figure 7: Skills for libraries

There may sometimes be resistance to change in libraries

Whilst there was clearly a recognition by participants of the need to change, there was also a consciousness that sometimes there may be resistance to change and a certain defensiveness in libraries:

If only university libraries could see the excitement of change. Libraries don't like change. It's like turning the Titanic around. (Library commentator)

That is not just the view of people looking in from the outside. A number of library managers also recognised some resistance to change in the library profession:

How do you get mindsets opened up so that we are not defensive about our own traditional practice but are proactive and open? I think we should be defensive of the values that we aspire to in terms of access to information and sharing of that information, but the way that we do it, I think can be very different, and we really need to be open to that. Open up to the fact that the professional practices we have learned over the years may not be the right ones for the future. (Library manager)

Developing such an open-mindedness and a culture of flexibility is seen by many as essential for the future of the profession.

Libraries can build on existing strong consortial and partnership networks

However, libraries in HE have a particular strength they can build on: their well-established tradition of partnership-working and consortial bargaining. It is likely in the future that such regional and national arrangements will have to be further strengthened and international collaborations extended. The NMC report identifies this as a key requirement and spells out some of the advantages: 'Collective action among institutions is growing in importance for the future of academic and research libraries. Today's global environment is allowing them to unite across international borders and work toward common goals concerning technology, research, and shared values. Within the current climate of shrinking budgets and increased focus on digital collections, collaborations enable libraries to improve access to scholarly materials and engage in mission-driven cooperative projects' (Adams Becker et al. 2017).

One of our library manager interviewees emphasised inter-library collaborations at ‘three levels... local... national and... international’. Another participant identified important growing areas of collaboration:

I think you will see libraries wanting to procure shared systems, wanting to manage their collections in a shared way, wanting to share expertise... I think that is much more observable in the US because of the consortial nature of things, but you can see it happening in the UK as well. (Library commentator)

As this participant suggests, such collaborations can happen in a wide variety of ways, not only around innovation, but also around ‘collective collection management’ of print materials and sharing of expertise and good practice. Procurement is an obvious area of collaborative working and it is interesting to see widespread regional or national developments in this area, as well as some evidence of new international collaborations around negotiations with suppliers (EUA 2017).

Several participants thought that more extensive sharing of services by libraries was a useful direction of travel. One commented that universities now extensively outsourced other services such as HR, finance and IT and are likely to look at more extensive library outsourcing in future:

Maybe libraries could help themselves to some extent. If they already engage in this sharing, then that could stop this hard-edged institution- or sector-wide push towards outsourcing. (Non-library participant)

Partnerships will be needed to address increasingly important preservation challenges for non-print materials

Apart from preservation of print materials, collaborative initiatives are likely to be needed to curate born-digital materials for the long term. Several of our interviewees emphasised the urgency in developing meaningful responses to this challenge:

There is a massive crisis unfolding in terms of preserving the cultural record for future scholars, and I believe that is going to be a central challenge for research libraries in the coming years. (Library commentator)

Responding to such a challenge also needs action at different levels – institutional, consortial, national and international:

Preserving that record of scholarship is something that is a big challenge, and it requires concerted international action. It is not something that I think would make any sense for the UK to try to do on its own. (Library manager)

The way these different levels interact and the loci of various activities and concentrations of expertise and technologies need to be addressed. It was again surprising that digital preservation did not appear higher up the list of key trends in Figure 1 (above). Concerted action informed by clear strategy and built on a robust skills base is yet to emerge in relation to this challenge.

Multi-professional collaborations within the library and partnerships beyond are also seen as crucial

Libraries are, of course, already changing, and the blurring of boundaries between libraries as departments and between library professionals and others is certainly impacting on the nature of libraries as organisations. In recent years, libraries as organisations have brought in staff from other professional backgrounds in order to deliver new services:

There is barely any library that is only containing librarians. I mean I have got learning technologists in here, I have got an enterprise [support unit], I have got learning and development academic skills tutors, all of them I either manage or have space in here.” (Library Manager)

This is certainly impacting on cultures and organisational structures in libraries. It is equally true that many people trained as librarians work in non-library departments.

In different institutions, libraries might work alongside other departments or even be converged with them in some sort of way – this is not new, but it may take new forms in future. One participant in a senior management position commented:

My department is largely converged. Unfortunately I don't often really have the luxury of focusing on the library as a thing in its own right. (Library manager)

The need to work to strengthen partnerships with other parts of the institution was emphasised by many participants:

[The library] has to become much more adept at creating internal alliances, internal partnerships, internal divisions of responsibility to move things along and get things done. (Library commentator)

In our survey, 74% of respondents agreed that the library was successful in developing partnerships in the institution, although, interestingly, 9% disagreed and a further 17% neither agreed nor disagreed (Figure 4 above). There is clearly still work to do.

A balance needs to be struck between collaboration and competition with other professional groups

One of the key challenges that becomes apparent here is that there needs to be a balance between collaboration and competition with other professional groups. Particularly in new areas, professional groups in different contexts traditionally compete for 'jurisdiction', something we have seen in HE since around 2010 in relation to research data management services (Verbaan & Cox 2014; Cox & Pinfield 2014). Whilst collaboration is undoubtedly essential, competition occurs as well, and libraries need to have the professional confidence and competence to stake a claim for new areas of activity where they have expertise to offer. One of our participants described this as the library engaged in a 'fight for its survival' (Library manager). Navigating the 'coopetition' (combining cooperation and competition) is often necessary a crucial feature of this.

As well as staking a claim for new areas, libraries need to continue to be clear about the justification for continuing to deliver *existing* services. Survey respondents seemed confident that the library would continue to be involved in delivering, indeed leading, on a wide range of services (Figure 8).

Services: In 10 years time it is most likely that the following services will...

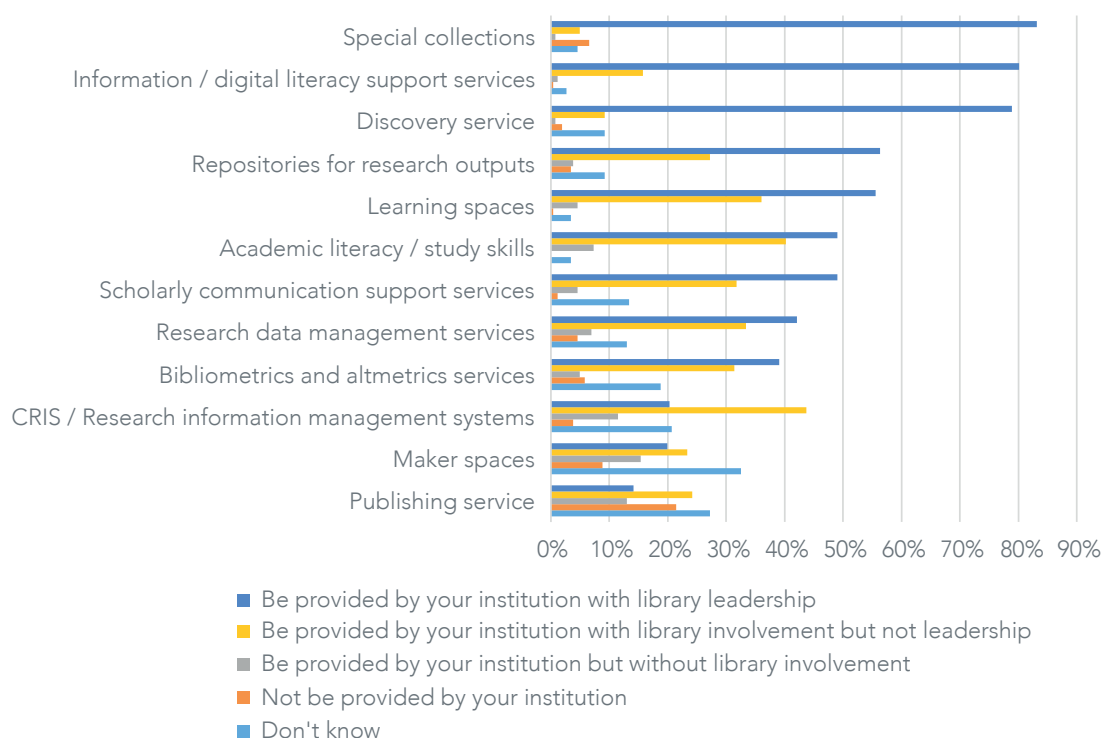


Figure 8: Library involvement in services in 10 years' time

However, the case for the library to provide certain services needs to be clear. Many services could be provided by other departments, so it is essential for there to be clarity about how the library adds value to services, as well as a clear understanding of any specific areas where the library does an especially good job. Learning spaces are a good example of services which are in many institutions partly provided by libraries and partly by other departments and where the distinction between such places across the university is diminishing. One of our non-library participants, pointing out several 'bookless' spaces or even buildings managed by libraries on university campuses, asked 'What is special about that space, why is it a library space?' Libraries need to be clear about what it is that they do that means *they* should carry on doing it.

6 Questioning old ‘mantras’, building new paradigms

Throughout our research we came up against a set of ideas about libraries that recurred, explicitly or implicitly, in people’s comments. We started to see these as a set of ‘mantras’ – things commonly believed and relied upon and rarely questioned. It became clear, however, that some of them are problematic, or at least not as simple as they sometimes appeared. We propose such traditional library ‘mantras’ should be questioned as part of libraries challenging themselves to respond to the rapidly changing environment in which they operate. Here, we begin that process.

Mantra 1: ‘The library is a strong brand’

That the library is a strong brand may be true in many institutions and our survey participants agreed that it was; but it is clear that the brand is often narrowly conceived (‘libraries are about books’) and increasingly seen as less important (‘the library is nice but has diminishing relevance’). Thus the brand can be both a strength and a weakness and should not be seen as an unqualified ‘good thing’. It can sometimes get in the way of communicating the message of what the library currently is as well as what the library might become.

Mantra 2: ‘The library is neutral’

Libraries have often characterised their role as a neutral one; but some of our participants questioned whether this was desirable or even possible, believing libraries should represent clear ethical values – the ‘neutral’ badge may not always be helpful. For example, sometimes it may contribute to the view of the library as a repository of content rather than a dynamic service engaged with the mission of its parent institution.

Mantra 3: ‘The library is trusted’

The library may be trusted in all sorts of ways where its expertise is seen as credible; but in other areas, the library may not have a trusted status. Particularly in new areas, such as research data management or TDM, the library may not have gained sufficient credibility

amongst its users to engender trust – the library is often not (yet) being seen as a natural partner in these areas.

Mantra 4: 'Library spaces are unique'

The idea that libraries provide physical space which is somehow different from that of other providers is often assumed; at the same time, the distinction between learning spaces delivered by the library and those outside the library is increasingly unclear, so the role of the library in delivering of learning spaces cannot be taken for granted.

Mantra 5: 'The library provides for discovery of information'

Libraries have traditionally concentrated many of their resources on metadata creation and management and delivery of discovery systems; but numerous studies show that library systems are not the systems of choice for most users and the library's role in delivering discovery, particularly in relation to networked resources, needs to be rethought.

Questioning such 'mantras' may help to free up thinking about library futures. We are not suggesting that they should simply be rejected, rather, they should be redefined in ways that may be relevant in the contemporary world and may usefully contribute to redefining the role of the library itself.

This could work alongside further development of thought-provoking and generative concepts or paradigms of the library. These paradigms are models or patterns of thinking that have already helped to define, but not to determine, library thinking about the future. Some of these paradigms have already been mentioned in our analysis and are well established in how librarians think about their work, such as:

Paradigm 1: The hybrid library

Libraries that integrate provision of analogue and digital resources; a term coined in the late 1990s (Rusbridge 1998) but which in many ways still defines the ongoing challenge faced by libraries today. We have discussed how a contemporary version of this challenge is around achieving greater clarity in the strategies relating to the print-to-digital shift.

Paradigm 2: The inside-out library

Libraries in which the traditional 'outside-in' functions (of selecting, acquiring and managing externally produced content for an institutional community) are complemented by a new 'inside-out' function of organising internally generated content for sharing beyond the institution (Dempsey 2016). We have discussed how this is seen as an increasingly important focus for libraries, but it needs to be managed sensitively to ensure users' support, and its extent is likely to vary considerably across the sector.

Paradigm 3: The library in the life of the user

Libraries which surface their services in the workflows of users and within pre-existing communities (Connaway 2015) rather than expecting people to come to the library, be that the physical library or digital library as a portal. We have discussed how this may become an increasingly important priority for libraries running their own separate discovery systems, but a coherent picture of what library services of this sort should look like is yet to emerge.

Paradigm 4: The library as platform

Libraries where people come together to create content and knowledge as much as simply to access existing information (Weinberger 2012). Maker spaces are positive manifestations of this paradigm. However, this paradigm needs more definition around the vision and its realisation in practice.

Paradigm 5: The library as infrastructure

Libraries as rich collections of buildings and spaces, information resources of all sorts, people, their expertise and social networks on which people can draw, existing within a wider ecology of infrastructures (Mattern 2014). We have seen how this paradigm can be realised to support datafied scholarship, but it requires a shift in mentality of the institutional library as part of a much bigger whole, and requires interoperability to be prioritised.

To these we want to add:

Paradigm 6: The computational library

Libraries as hubs for capturing and mining full text and reflectively analysing data about information usage in this context, to provide access to information and data tailored to user requirements. We have discussed the nexus of trends around artificial intelligence, machine learning and the internet of things (amongst others) that underpin the paradigm and the need for deeper engagement of the library community in these areas.

Paradigm 7: The service-oriented library

Libraries whose identities are built around services rather than collections (with collections redefined as services in themselves). Libraries are clearly heading in this direction as a major part of redefining their mission in the contemporary HE environment, but need to secure their role (and not let others take it). There clearly needs to be a more credible articulation of what the library is and does that is understood by stakeholders outside the library.

Paradigm 8: The library as digital third space

Libraries as international collaborations to create compelling and vibrant communities for scholars to access and share knowledge within and across disciplinary communities in environments not shaped by commercial imperatives. Whilst this is a major undertaking requiring network-level thinking and activity, it creates enormous potential for library professionals.

Paradigm 9: The globalised library

Libraries that work on a network level to solve problems such as digital preservation and shared services provision. Like so many of the current trends, this involves a shift in strategic focus from the institutional to the global. Such an approach may in fact help libraries to deliver solutions to their local institutions more effectively. But it is also about connecting libraries to the wider institutional, national and international context within which they operate.

Paradigm 10: The boundaryless library

Libraries that operate beyond traditional boundaries by incorporating people with a range of professional backgrounds into the service and engaging in collaboration outside the service and profession, both within and outside the institution. This involves an openness and confidence in the library profession and a deftness in engaging in 'coopetition'.

These paradigms are thought-provoking starting points for reflecting on different types of future. They may be rather abstract and can be interpreted in different ways. They capture directions of movement that may never be fully played out but nevertheless constitute visions of what a library could be. They can also encapsulate new ways of thinking. They are not mutually exclusive – they may sometimes pull in different directions but can often be combined in different ways, reflecting the different contexts of different types of library. How these models could be used to shape reality will depend on the time, the place, the users' requirements and the priorities of the institution. Using them as a basis for discussion alongside ongoing horizon scanning is likely to help libraries ensure that they can continue to play a useful role in the future.

7 Developing the role of SCONUL

In the context of fundamental changes in the nature and role of libraries, organisations like SCONUL were seen by many as having an important role (Figure 9). They could help to create spaces for more long-term thinking around transformational change.

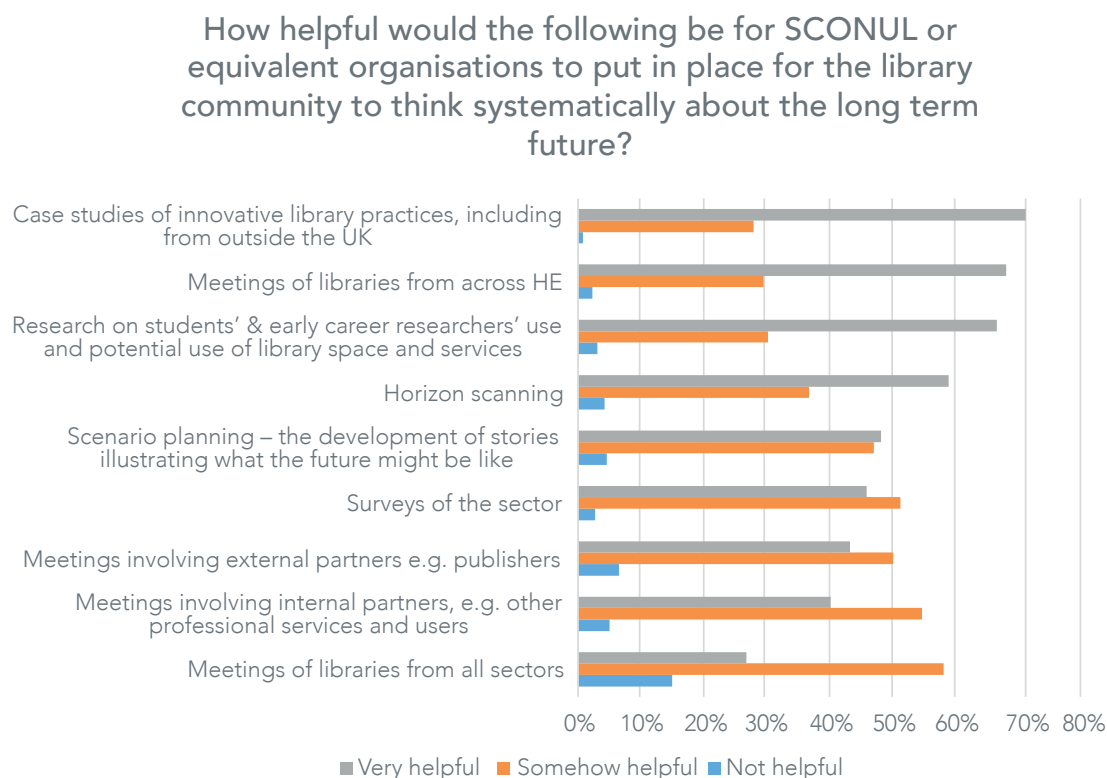


Figure 9: The role of SCONUL

Participants in the survey responded positively to nearly all the suggestions that were made about how organisations like SCONUL could make a positive contribution to understanding and securing the future of academic libraries. Case studies of innovative practices, studies of particular user groups and meetings of libraries across the HE sector were seen as particularly beneficial. We have also argued that meetings with internal and external non-library stakeholders are equally important (despite the lack of priority given to them by some survey respondents) in order to ensure the academic library profession is outward-looking and collaborative.

8 Conclusions and recommendations

Conclusions

Living with and addressing paradoxes

Rather than an end-point in itself, this report is part of a much wider ongoing discussion about the future of academic libraries. As such, it is appropriate to summarise it in the form of fourteen paradoxes with which libraries are currently living and about which there is considerable ongoing debate in terms of their resolutions:

- 1 Participants identified a wide range of potentially transformative trends for libraries, but there was no consensus about which trends were most important.
- 2 Some key nexuses of change can be identified, but the end game for each remains unclear.
- 3 Despite the recognition of potential for change, images of the library of the future seemed rather similar to what exists now.
- 4 Despite many trends being recognised, some key transformational forces, such as artificial intelligence, were not widely understood.
- 5 Library spaces are seen as unique and valuable, but library digital spaces are far from compelling.
- 6 Libraries see themselves as good at collaboration but are often too insular.
- 7 Libraries see themselves as forward looking but often fail to engage in truly innovative thinking and risk-taking.
- 8 There was agreement that alignment to the institution was essential, but we suggest there are three radically different styles of alignment.
- 9 Library participants were optimistic about the future of libraries, but non-library participants less so.

- 10 The need for change is widely recognised but so is the existence of resistance to change.
- 11 Libraries have to respond to the immediate needs of users but have a growing challenge of preserving born-digital objects.
- 12 There is a need both to collaborate and to compete with other departments and organisations.
- 13 Collaboration is increasingly necessary for delivery of library services but can contribute to the erosion of the library's identity.
- 14 There is wide support for some mantras about the value of libraries, but in reality these need to be questioned.

Recommendations for academic libraries

Our research has identified a number of key areas in which individual libraries could usefully undertake a set of activities to address many of the issues we raise. They are expressed below in generic terms and need to be developed into action plans for any specific local context. It is recommended that academic libraries:

- 1 Work with stakeholders such as user communities and colleagues in other professional groups to undertake more analysis of key trends that affect them and their institutions, especially environmental factors and more long-term issues.
- 2 Set in motion processes, especially consultation with users, to develop more clarity around the print-to-electronic shift and how it is likely to develop over time, in order to inform strategy and policy formulation.
- 3 Investigate the possibilities of developing collaborations to create meaningful online scholarly venues to complement library physical spaces.
- 4 Review local responses to the shift from collections to services in order to position the library effectively in the institution.
- 5 Examine the implications of the 'inside-out' library and its relative prioritisation over time against 'outside-in' functions.

- 6 Review the library's role in discovery, in particular developing ways of surfacing library content in network discovery tools and developing services using new discovery and analytical approaches such as TDM.
- 7 Carry out more work examining the significance of key developments such as artificial intelligence, machine learning, internet of things, digital humanities and other areas of datafied scholarship, and begin to develop services in these areas.
- 8 Consider how best to achieve the roles of service-provider, partner and leader, and get the emphasis right between them in the institutional context.
- 9 Debate the meaning of the ten paradigms that envision what libraries can be in the institutional context.
- 10 Consider how a compelling vision of the library can be created for communication to the wider institution.
- 11 Create opportunities for high-risk innovation and longer-term thinking.
- 12 Investigate how cultures encouraging flexibility and innovation can be encouraged in libraries without undermining necessary established processes and routines.
- 13 Develop ways of making the preservation of born-digital materials one of the major priorities of the library community, considering the appropriate level for activity (institutional, regional, national or international) and how these can be coordinated.
- 14 Consider the balance between collaboration and competition with other institutional professional services departments as well as external providers in relation to new and existing services.
- 15 Focus on developing clear messages about the value the library adds in providing particular services to the institution and ensure library staff are equipped to communicate these messages.
- 16 Review the library's current staff skills base in the light of these recommendations.

Recommendations for SCONUL

There are a number of actions that SCONUL could usefully undertake:

- 1 Promote further discussion of the current report.
- 2 Work with other partners to harness expertise and capacity for horizon scanning.
- 3 Promote greater understanding of trends whose implications for libraries appear to be less well understood, such as artificial intelligence, machine learning, TDM or wider environmental trends.
- 4 Host more discussion around potential end-points arising from the complex nexuses of change, the validity of the five mantras and the implications of the 10 paradigms defined in this report.
- 5 Promote more discussion around key issues such as the role of library space, the balance between print and electronic and the balance between collections and services.
- 6 Host more discussion around how, given the need to align to institutional priorities and different styles of alignment (service-provider, partner and leader), different types of academic library might respond in different ways to current changes.
- 7 Promote the sharing of best practice in (a) explaining the changing nature of the role of the library to stakeholders; and (b) managing disruptive change.
- 8 Review skills required for the further development of the role of libraries in the sector and analyse training and recruitment patterns to ensure libraries are future-ready.
- 9 Promote and facilitate the interaction of the SCONUL community with other key communities among internal and external stakeholders (e.g. estates, IT and publishers), and involve user communities.
- 10 Work to create more opportunities for more collective long-term thinking.
- 11 Sponsor the creation and discussion of case studies of new practices (including from outside the UK).

- 12 Sponsor research on trends in user behaviours, e.g. among undergraduates and researchers.

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Appendix 1: Methods

This report is based on a mixed-methods study comprising five major phases (Figure 10).

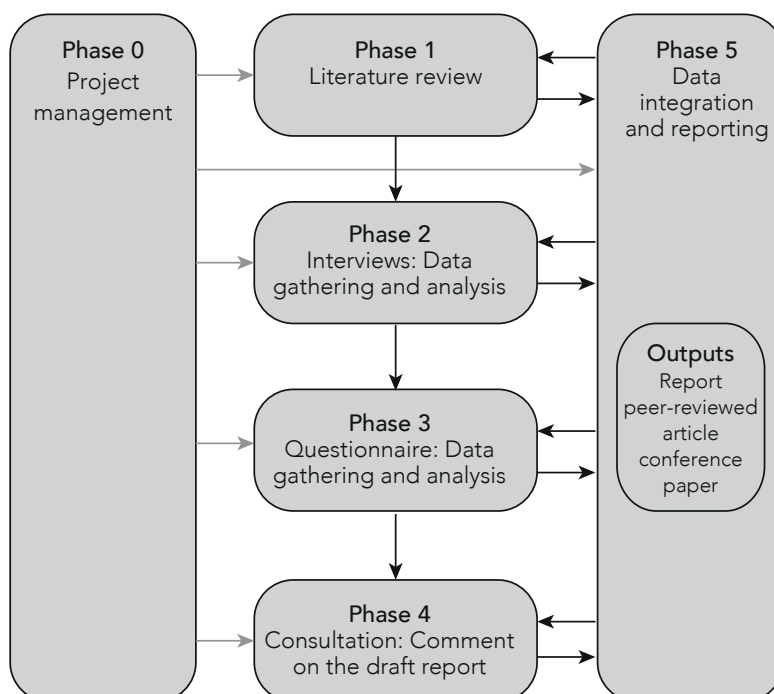


Figure 10: Overview of the project

Phase 1 involved a review of the literature. Here we focused on a number of key recent reports discussing the future of libraries, including the ACRL environmental scan (ACRL 2017) and Top Trends (ACRL 2016), NMC horizon reports (Adams Becker et al. 2017), ARL 2030 scenarios (ARL 2010), ARUP future libraries report (ARUP 2015), SCONUL future of the academic library scenarios beyond 2020 (Curtis 2011), MIT report on the future of libraries (MIT 2016), and Ithaka S&R library reports (Wolff & Schonfeld 2017; Tancheva et al. 2016). Between them, these publications represent a valuable resource in mapping the future of libraries. We also made considerable use of the research and professional literature, particularly from the last five years.

Phase 2 involved a set of interviews with key stakeholders. These included ‘library managers’, comprising (mostly) directors of service and other senior staff. We also spoke

to 'library commentators', such as academics, consultants or other experts in the field. Our interviewees also included 'non-library participants', a variety of thought leaders in higher education and technology-related organisations. We interviewed 33 participants in total – 23 from the UK, 10 international; 15 women, 18 men. The interviewees are, with their permission, listed in Appendix 2, but any particular quotations in our report have been anonymised using the categories above ('library manager,' etc.). Such categorisation was not always straightforward as our participants carry out a wide range of roles and come from a variety of backgrounds, but they are included to give some context to the remarks reported. The interviews were wide-ranging and focused where possible on the long term rather than immediate concerns. They were conducted between May and July 2017, each typically lasting an hour. They were recorded and transcribed in full. We then carried out systematic 'thematic analysis' (Braun & Clarke 2006) on the interview transcripts, including a process of detailed coding from which we identified major themes in the data.

Phase 3 took the form of a survey of library staff in the UK, carried out online during July and August 2017. It was distributed on our behalf by SCONUL to its closed lists, and was also made available more widely on open lists, including LIS-Link. We received 261 usable responses; demographic information is included in Appendix 3. The survey tested a number of issues arising from the literature and particularly the interviews. We carried out various statistical tests on the data in order to identify statistically significant patterns.

Phase 4 was an opportunity to get feedback on our findings from phase 2 participants and members of the SCONUL Transformation Group, which sponsored this research. Key items of feedback were taken on board and incorporated into the report where possible. This phase of the project was particularly useful in helping us test ideas and reflect on responses to them.

Phase 5 is ongoing and will include not only this report but also a set of meetings for the library community and contributions to conferences. We also plan a peer-reviewed publication to report the findings of the research in more detail. Our aim is to foster debate and discussion and encourage further work on key issues arising from this research.

Appendix 2: Interview participants

We are grateful for the involvement of all the participants we interviewed as part of the project. We have tried to reflect and engage with the views they expressed, but acknowledge that we, as authors, not they, are responsible for the views expressed in this report. Naming them here allows us to thank them but does not mean they endorse this report.

Penny Andrews, PhD student, University of Sheffield

Kirsten Black, Director of Student and Learning Support, University of Sunderland

Chris Bourg, Director of Libraries, MIT, USA

Caroline Brazier, Chief Librarian, British Library

Marshall Breeding, Founder and Editor, Library Technology Guides, USA

Professor Sheila Corral, University of Pittsburgh, USA

Lorcan Dempsey, Vice President, Membership and Research and Chief Strategist, OCLC, USA

Professor Sir Ian Diamond, Principal and Vice-Chancellor, University of Aberdeen

Liam Earney, Director of Jisc Collections and Head of Library Support Services, Jisc

Heidi Fraser-Krauss, Director of Information Services and University Librarian, University of York

Martin Hamilton, Resident Futurist, Jisc

Bob Harrison, Director, Support for Education and Training

Fiona Harvey, Education Development Manager, University of Southampton; Chair of ALT

Sue Holmes, Director of Estates and Facilities, Oxford Brookes University; Chair of the Association for Directors of Estates

Anne Horn, Director of Library Services, University of Sheffield

Dr Wolfram Horstmann, Director, Göttingen State and University Library, Germany

Chris Keene, Library and Scholarly Futures, Jisc

Dr Donna Lanclos, Associate Professor for Anthropological Research, Atkins Library at UNC
Charlotte, USA

Clifford Lynch, Executive Director, Coalition for Networked Information, USA

John MacColl, University Librarian and Director of Library Services, University of St Andrews;
Chair of Research Libraries UK

Professor Wyn Morgan, Professor of Economics and Pro Vice-Chancellor for Learning and
Teaching, University of Sheffield

Professor Neil Morris, Chair of Educational Technology, Innovation and Change in the School
of Education, and Director of Digital Learning, University of Leeds

Professor David Nicholas, Director CIBER Research

Emily Nunn, PhD student, University of Sheffield

Chris Powis, Head of Library and Learning Services, University of Northampton

Dr Richard Price, Founder, Academia.edu

Dr Jason Priem, Co-Founder, Impactstory

Andy Priestner, Director, Andy Priestner Training and Consulting

Kira Stine Hansen, Deputy Director General, University of Copenhagen, Royal Danish Library,
Denmark

Prof Simon Tanner, Professor of Digital Cultural Heritage, King's College London

Lynne Tucker, Interim Chief Information Officer, Goldsmith's, University of London

Caroline Williams, Director of Libraries, Research and Learning Resources, University of
Nottingham

Nicola Wright, Director of Library Services, London School of Economics and Political
Science (LSE)

Appendix 3: Survey demographics

We would like to give our thanks to all those who took part in our survey.

	Count	Percentage
Institution		
Post-1992	120	46
Non-Russell Group pre-1992	72	28
Russell Group	69	26
Size		
Under 5,000	21	8
5,001–29,999	209	80
Over 30,000	31	12
Senior management team		
Yes	114	44
No	147	56
Years in position		
5 years or less	143	55
6–10 years	52	20
11+ years	66	25
Age		
18–25	2	1
26–35	37	14
36–45	69	26
46–55	100	38
55–65	50	19
65+	1	0
Prefer not to say	2	1
Gender		
Female	181	69
Male	73	28
Other	0	0
Prefer not to say	7	3

