Book Section:

Research

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Introduction

This chapter provides an overview of the research in librarianship and information science (hereafter LIS) carried out in the UK in the period 2011-2015, complementing the analogous British Librarianship and Information Work chapters by Nicolas for the periods 1991-2000[i] and 2001-2005[ii] and by Sen and Willett for the period 2006-2010.[iii] More specifically, we consider first the funding environment for LIS research in the UK, and then the process and outcome of REF2014, a nationwide evaluation of the quality of research conducted by UK universities. The next, and largest, section discusses the range of LIS research being conducted in the UK as reflected in both the academic and the professional literatures, the latter including a brief discussion of the perceived value of different media to the research process, and the chapter concludes by summarising important characteristics, both positive and negative, of the current state of LIS research in the UK.

In writing this chapter we were informed by, and are grateful for, the views of academic colleagues at six of our fellow LIS departments in England and Scotland. They provided a more localised view of LIS research activity within their respective institutions, and provided some of the examples and all of the quotations noted below.

The funding environment

Academic research is funded by the UK government in two different, but complementary, ways. First, the seven research councils that comprise Research Councils UK (hereafter RCUK) fund individual research projects that have been submitted to them for peer review, these submissions often being in response to a call for proposals in some specific area of current interest to a research council. Of these seven councils, it is the Arts and Humanities Research Council (AHRC) and the Economic and Social Research Council (ESRC) that are arguably best placed to support research in LIS. That said, the increasing inter-disciplinarity of LIS research (vide infra) means that other councils – most notably the Engineering and Physical Sciences Research Council (EPSRC) - may also be an appropriate source of funding for, e.g., ICT-related research. The current situation may, however, change as a result of a recent review of the research councils led by Sir Paul Nurse that recommended that they should evolve into a single organization, Research UK that would have overall responsibility for funding.[iv] Second, the government makes block grants to universities based on the performance of their constituent departments in the Research Excellence Framework that is discussed in detail in the next section.

RCUK funding is much sought after but highly competitive, and thus forms only a small part of the research income of most LIS departments. In the past, there have been sources such as the British Library Research and Development Department, the Library and Information Commission and finally the Museums, Libraries and Archives Council (MLA) that have had

a specific remit to support LIS research. However, the MLA was abolished in 2010, with some of its functions being assumed by Arts Council England and with a certain amount of investment from government and National Lottery funding. The focus of this investment has been on funding short-term consultancy and/or project evaluation rather than on sustained, empirical academic research. LIS departments have thus had to be creative in identifying additional sources of funding if they wish to continue and to develop their research missions. International funding sources are increasingly popular, with at least four LIS departments being successful in obtaining EU funding, most obviously from the Framework Programme for Research and Technological Development (FP7) programme which ran from 2007-2013, and the Horizon 2020 EU Framework Programme for Research and Innovation, which has made funding available for the period 2014-2020. Indeed, the EU provided the single largest source of funding in the REF2014 submission from our department in Sheffield, and UK universities in general have increasingly been encouraged to tap EU funds to compensate for shortfalls more locally. This increasing dependence means that universities are one of the sectors that are likely to be most adversely affected by the 2016 referendum in which the UK voted to leave the EU. Heretofore, the UK higher education sector has been a major recipient of EU funding, but this is almost certain to decrease substantially as the UK progressively unwinds its links with mainland Europe.

Within the UK, it is clear that LIS academics continue to source non-governmental public sector funding from a wide range of agencies including Arts Council England, the British Academy, JISC and the Scottish Library and Information Council, with support from charitable organisations obtained from, e.g., Nesta and the Andrew Mellon Foundation. Many departments continue to work with external partners from the public and private sector, either supported directly by, e.g., local councils, or with funding jointly obtained from, e.g., the Heritage Lottery Fund. Private sector industrial funding also continues to support scientific research, with examples from one Scottish institution including BP, Shell and Senergy. The level of funding for this non-RCUK research varies significantly, but with the majority of non-EU funding tending to be smaller scale. As one respondent noted, he and his colleagues had received "a variety of smallish grants, from national and international sources, none predominating", and certainly this seems typical of the overall trend. The austerity policies implemented by the UK Government since 2010 have affected not only national government funding sources but have had an effect on the availability of other sources of support, with local councils and third sector agencies particularly badly affected during this time. It is also worth noting that it is less likely that the smaller (or less well-funded) organisations will be able to support the full economic cost of a research project, which further reduces the total funding obtained, although the research and its outputs are not necessarily any less significant to the academic and professional communities.

The Research Excellence Framework (REF2014)
Ever since 1986, the UK funding agencies have conducted regular, extended peer-reviews of the research carried out by academic departments throughout the higher education sector. The history of these evaluations, as they have involved and affected LIS departments, has been described by Willett[v] in a book chapter that appeared shortly before the completion of

the most recent such exercise, the Research Excellence Framework (hereafter REF2014), the results of which were published in late 2014.[vi] These exercises are of paramount importance for academic departments since the assessments drive governmental funding for research in subsequent years, and since the resulting 'league tables' play an important role in universities' marketing and recruitment activities.

The peer-reviews in a specific subject domain, referred to in REF-speak as a Unit of Assessment or UoA, are carried out by a small panel of experts from that domain, and for many years there had been such a UoA for what was entitled Library and Information Management, this encompassing both LIS departments and an increasing number of departments whose principal focus was information systems. The assessments in REF2014 were organized in a very different way. First, the number of UoAs was drastically reduced (from 67 in 2008 to 36 in 2014) by the merger of pairs of previously distinct UoAs. This was the case in our sector with the former Library and Information Management UoA being merged with the former (and much larger) Communication, Cultural and Media Studies UoA. Second, each of the resulting UoAs was allocated to one of four panels that specified the assessment criteria for all UoAs in a broad subject area: in the case of the new Communication, Cultural and Media Studies, Library and Information Management UoA (UoA 36) this was the panel for arts and humanities. The rationale for the merger of the two previous UoAs was never made clear, and the final report of the arts and humanities panel noted that "the consolidation of these fields into a single UoA poses continuing difficulties that may need revisiting for a future exercise, not least as both broad fields are thriving and extensive".[vii] The location within the arts and humanities panel was also questionable: the panel report noted that "there was a marked reduction, as compared to 2008, of research in information systems, which was likely to have been submitted to another main panel", and much of the research that was submitted for assessment to the UoA had a strong social science, rather than arts and humanities, focus.

A further, and significant, difference was in the materials that were submitted for assessment. As in previous exercises, departments had to submit examples of staff research outputs (e.g., articles, books, reports etc.) and documentation describing the environment in which their research is carried out (e.g., staff recruitment and development strategies, the role of research students and staff, and the department's contributions to the discipline). In REF2014, departments were additionally assessed on the impact of their research outside of academe, where impact was defined as "an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia".[viii] Each of the three components of a submission (i.e., outputs, environment and impact) was graded on a five-point scale and then the department allocated a profile indicating the percentage of their overall submission that had received each of the five grades.

A total of 67 departments submitted to UoA 36 but only ten of these submissions (those from Aberystwyth, Brighton, City, Loughborough, Napier, Northumbria, Robert Gordon, Sheffield, University College London, and Wolverhampton) contained significant amounts of

LIS-related material (along with much non-LIS material in several cases). That said, some LIS research was undoubtedly submitted elsewhere, e.g., that in the Department of Computer & Information Sciences at Strathclyde was included in the university's submission to the UOA for Computer Science and Informatics, and the staff in the Department of Languages, Information and Communications at Manchester Metropolitan University were submitted variously to the UoAs for Education, English Language and Literature, and Sociology. The profiles for the ten departments are listed in Table 1 where, e.g., 35% of Loughborough's submission achieved the highest grade, 40% the second highest grade etc.

Institution	REF profile
Aberystwyth University	6/28/44/22/0
City University	33/44/20/2/1
Edinburgh Napier University	24/48/26/2/0
Loughborough University	35/40/19/6/0
Robert Gordon University	15/43/34/8/0
University College London	29/39/21/11/0
University of Brighton	27/41/27/5/0
University of Northumbria at Newcastle	6/46/35/13/0
University of Sheffield	38/34/20/8/0
Wolverhampton University	48/41/11/0/0

Table 1. Gradings of LIS departments in REF2014

The most striking profile is that for Wolverhampton: this is certainly not a traditional LIS department, but the School of Mathematics and Computing hosts the Statistical Cybermetrics Research Group, which is one of the leading centres world-wide for research in bibliometrics and research evaluation. The group is directed by Prof. Mike Thelwall, who was the 2016 winner of the 2015 Derek John de Solla Price Medal for his contributions to scientometrics. Wolverhampton apart, there is the traditional strong showing from City, Loughborough, Sheffield and UCL, and it was hence particularly regrettable that Loughborough University decided to close down its Department of Information Science shortly after REF2014, although the majority of academic staff are continuing their research activities in other departments within the institution.

Sen and Willett noted that the inclusion of impact in the REF should enable the sector to perform well given the real-world focus of much LIS research,[iii] and inspection of the impact submissions (at http://results.ref.ac.uk/Results/ByUoa/36) demonstrates that this clearly was the case. Examples of such research include: work at UCL on the theory and design of faceted classifications that has influenced recent developments in the UDC and DCC schemes, which are used in over a third of a million libraries worldwide; work at Loughborough on the exploitation of mobile technologies that has transformed informational processes in Leicestershire Police and has been adopted by other police forces both in the UK and abroad; and work in Sheffield on computer-aided drug design that has resulted in a range of software tools that are used by all of the world's major pharmaceutical companies.

Planning is now well under way throughout the higher education sector for the next REF, which is due to take place around 2020 and which is expected to increase the weighting of the impact component of submissions. In an interesting follow-up study, Marcella et al. interviewed staff involved in UOA 36 impact submissions[ix] with the aim of determining whether consideration of impact could affect future research behaviour in the sector. They found little evidence for substantial changes other than an unsurprising focus on interacting with potential beneficiaries of the research, something that can only benefit the LIS profession as a whole if this does indeed prove to be the case.

LIS research in academic publications

It is possible to obtain an overview of the academic research landscape in the UK by looking at the publications of the current generation of researchers. The word academic has been italicised in the previous sentence since much important LIS research is conducted outside of traditional academic departments or is not reported in the peer-reviewed academic journals that form the basis for multi-disciplinary databases such as Web of Science and Scopus. We shall return to this point later: for the present, we consider just those publications that have appeared for 2011-2015 in the Information Science & and Library Science subject category of the Web of Science Core Collection database (hereafter WoS). A search in April 2016 identified a total of 1,747 publications (defined as articles, conference papers and reviews) with at least one UK author. It must be emphasised that this set of documents has several obvious limitations as a focus for analysis. First, the Information Science & and Library Science WoS category includes a fair number of journals whose focus is not LIS, e.g., Ethics and Information Technology, MIS Quarterly, Research Evaluation, and Telecommunications Policy. Second, much important LIS research is reported in publications that are not included in Information Science & and Library Science but in other WoS categories: this point is considered further below when discussing the REF2014 submissions. Third, some LIS research undoubtedly appears in book chapters; although these more often act as secondary sources reporting on and discussing research published elsewhere, typically in a primary journal or conference proceedings.

Table 2 lists the most prolific authors, as denoted by those with ten or more appearances in the set of 1,747 publications. Of these 14 prolific authors, one-half work in fields that are arguably associated with, rather than central to, LIS: thus, Thelwall, Kousha and Rafols study bibliometrics (and the closely related area of research evaluation), and the contributions of Dwivedie, Allen, Barrett and Karanasios are principally in the area of information systems. The 1,747 articles yielded a total of 5,849 citations in the period 2011-2015, with all of the ten most cited articles being in the areas of bibliometrics or information systems (e.g., the citations to the articles by Fanelli[x] or Sultan,[xi] respectively). The LIS focus is more obvious if one considers the most productive publications, as shown in Table 3, where these are defined as those providing 30 or more contributions in the period of interest (in this table, the total for the Journal of the Association for Information Science and Technology includes articles appearing in its predecessor, the Journal of the American Society for Information Science and Technology).

Author	Contributions
Michael Thelwall	81
Lyn Robinson	20
Kayvan Kousha	19
Ismail Rafols	16
Paul Clough	15
James Hartley	14
David Nicolas	13
Christine Urquhart	12
Yogesh Dwivedie	11
David Allen	10
Michael Barrett	10
Mark Hepworth	10
Stan Karanasios	10
Jeannette Murphy	10

Table 2. The most productive LIS authors based on WoS data for 2011-2015

Publication	Contributions
Journal of the Association for Information Science and Technology	99
Scientometrics	92
Health Information and Libraries Journal	83
International Journal of Information Management	75
Journal of Documentation	67
International Journal of Geographical Information Science	48
Information Research	45
Journal of the American Medical Informatics Association	45
Learned Publishing	42
Journal of Information Science	41
Information Processing and Management	36
Aslib Proceedings	35
Journal of Librarianship and Information Science	35
Research Evaluation	34
Journal of Knowledge Management	32
Journal of Information Technology	32
Library Trends	32

Table 3. The most popular journals for LIS research based on WoS data for 2011-2015

In addition to the journals in Table 3, there was one highly productive conference proceedings, the Proceedings of the International Conference on Scientometrics and Informetrics, which provided 34 contributions.

The list in Table 3 has much in common with one included in the previous article in this series by Sen and Willett: they listed the ten most frequent publication outlets for the period 2006-2010, and all but two (specifically, the European Journal of Information Systems and Program) of these are included in Table 2 above, demonstrating a marked degree of consistency in the most popular outlets. Colleagues from the UK LIS departments agreed to some extent with the accuracy of the list: on the one hand "We'd broadly concur with the list of most popular journals" and "This seems pretty accurate for us", while on the other "Important journals for us are missing from the list" and "…[the list] probably only represents a part of the discipline". Important sources that were noted as being absent included Library and Information Research, Library Quarterly and Library Review, as well as a whole range of more specialist journals covering, e.g., humanities and cultural studies, knowledge management, legal and government information, library and information history, politics and public policy, publishing research.

The breadth and the inter-disciplinary nature of LIS research[xii] must be taken into account when making any assessment of the research landscape: to equally and fairly represent subjects as diverse as those in the previous sentence (let alone more specialist topics such as bibliometric networks, chemical information systems, information governance, and social media) with a list of just ten journals would always be an impossible task. The interdisciplinary breadth of the discipline has been discussed recently by Ding et al.[xiii] in a paper analysing the degree of inter-disciplinarity of the publications by iSchools, an international consortium (at http://ischools.org/) of university school and departments that share a common interest in the relationships between information, people and technology. Of the 63 iSchools worldwide, the universities of Sheffield and Strathclyde were ranked second and ninth respectively for inter-disciplinarity, with moderate correlations found between inter-disciplinarity and both the number of publications and the number of journals for each iSchool. Ding et al. also found a negative correlation between interdisciplinarity and the number of publications per journal. As the authors suggest, this indicates that 'interdisciplinarity increases when the publications are more evenly distributed among journals.'

So what topics have aroused the interest of UK LIS academics? To answer this question we have both analysed the REF2014 submissions of the ten departments listed earlier, and consulted academic LIS colleagues for their views of the key themes identified in the research outputs of their departments.

For the REF 2014 submissions we considered only those outputs that appeared in 2011 or later and that appeared from the title of the output (or the publication source) to represent a contribution to LIS (considered in a broad sense and hence including work on, e.g., information systems, digital humanities and publishing). The requirement for an LIS focus

was applied to allow for the fact that in some cases a submission to the UoA included staff from both LIS and non-LIS departments: for example, that from Sheffield involved staff from both the Information School and the Department of Journalism Studies. While some of the submissions reflected the interests of specific institutions, e.g., work on chemical information systems at Sheffield, on humanities computing at UCL or on Scottish elections at RGU, the bulk of the papers submitted for review address long-standing areas of interest for LIS researchers, both in the UK and more generally. Examples include studies of academic and public libraries, of information retrieval, of information seeking behaviour, of information literacy, of knowledge management, and of records management to name just those figuring most prominently in the submitted outputs. When asked to identify key terms or themes of their research, the responses from the UK LIS departments demonstrated clearly that certain themes remain core to the discipline, with these – hardly surprisingly – demonstrating a considerable degree of overlap with the REF submissions. Examples included archives and records management, information behaviour, information management, information retrieval, information theory, library/librarianship and information studies, user studies. Other significant themes include geographic information systems, human-computer interaction, information ethics and policy, information visualisation, metadata, preservation management, publishing, and scholarly communication.

The departments were also asked to comment on the extent to which their research activities were aligned with government policy. Opinions here were divided, with responses ranging from "There was little evident alignment with government policy" to "Much of the research undertaken has been in line with government policy". Other respondents positioned themselves in the middle ground, giving isolated examples of research either "directly related" to government policy and strategy, describing their work as directly "responding to the policies and priorities of the [Scottish] government", or by stating, e.g., "We don't deliberately align ourselves to Government policy in the sense of responding to Government policy but often will use policy where appropriate to frame our research". It seems evident that the research agenda is shaped by government policy, but the extent to which it in turn is shaping policy is perhaps less clearly articulated.

It is important for an academic discipline to ensure that its education programmes can produce a strong pipeline of young researchers who can go on to contribute to the discipline as their careers develop. It is hence interesting to consider outputs resulting from the masters dissertations that form a core component of all postgraduate LIS programmes, and special issues of Aslib Proceedings (reviewing research at Aberystwyth) and of Library Trends and Journal of Information Science (both marking the 50th anniversary of the founding of the Sheffield department) contain twelve such articles, covering topics as diverse as workplace stress in the library of a further education college,[xiv] public libraries' provision of LGBT-based fiction[xv] and the information seeking behaviour of genealogists and family historians.[xvi] In 2012, Health Information and Libraries Journal instituted a 'Dissertations into Practice' feature that was specifically designed to provide a forum for the publication of high-quality student dissertations and to highlight the impact of student research on policy and practice. This feature has proved to be very successful and has now established itself as a

regular part of the journal, with the published articles covering a wide range of health-related LIS topics (as reviewed by Marshall[xvii]). Also in 2012, Vol. 61, nos. 8/9 of *Library Review* was a special issue offering a range of articles based on student theses and dissertations (these coming not just from the UK but also from Australia, Canada, Germany, India and Malaysia), and it is now part of this journal's policy to publish papers based on postgraduate research. The UK-based articles from this issue again cover a wide range of subject matter, such as the effect of the 2008-09 recession on public libraries in the Midlands[xviii] and the bibliographic control of musical works.[xix]

In marked contrast to much of the academic literature discussed thus far - and as would be expected in an academic discipline with a significant vocational component - LIS research is frequently focused on the practitioner and public service user. It is hence also appropriate to consider research-oriented contributions that have appeared in the professional literature and via social media.

LIS research in the professional literature and in social media
In order to gain a representative view of research published in the professional press, a search was undertaken of all issues of CILIP Update magazine published between January 2011 and December 2015. This publication was selected as the main journal of the Chartered Institute of Library and Information Professionals (CILIP), describing itself as "the leading publication for the library, information and knowledge management community".

Although a total of 67 research-related articles were published during the period, just 23 of these were specifically written by LIS researchers affiliated to one of nine university departments (seven of which are listed in Table 1, but also including Leeds Beckett and Salford Universities): 16 by academic or research staff, 3 by doctoral students, 3 by masters students and the remaining one by an undergraduate student. Of the 23 articles, 13 reported research undertaken as part of a collaboration, two with another academic institution, five with a research network (e.g., Research Libraries UK, or the Research Information Network), and the remaining six with an external organisation (e.g., CILIP, CyMAL: Museums, Archives and Libraries Wales, the Royal National Institute of Blind People, or the Scottish Libraries and Information Council). Of the 14 papers citing a specific source of financial support for the research presented, funding agencies included the AHRC, British Academy/Leverhulme and EU funding, and a variety of external agencies including CILIP, JISC and SCONUL. The papers cover the academic, public (including youth) and school library sectors, with the topics - broadly summarised – including bibliotherapy, children's literacy/digital literacy, GIS, information literacy, online discovery, reading for pleasure, and research support, training and development.

Of the remaining 44 articles, seven were written by, or with the involvement of, academics from non-LIS disciplines, including Computer Science, Education, Health and Social Care, and Media and Communications. Stated funding sources included the Carnegie UK Trust, EPSRC and the MacArthur Foundation. Perhaps surprisingly for a professional journal, just eight were written by practitioners from academic, public, school, health and music libraries,

reporting on research-related initiatives which seemed not to be externally funded apart from in two cases: these were an investigation of perceived levels of student information literacy funded by Credo, and a scoping study of the value of musicians' letters for researchers funded by the Music Libraries Trust.

Interestingly, the 29 research-related papers published in CILIP Update between 2011-15 by external agencies exceeded in number the 23 published by LIS academic researchers. The former include: Arts Council England working with and funding BOP Consulting (specialising in culture and the creative economy); ALMA (Archives, Libraries and Museums Alliance UK) working with ERS Research & Consultancy Ltd. and funded jointly by the Welsh Government, Department of Culture and Leisure Northern Ireland and Scottish Library and Information Council; and JISC working with and funding Research Libraries UK. Other agencies listed as authors included the National Literacy Trust and the Reading Agency for reading-related research, publishing agents and groups such as JISC, Taylor & Francis and the Publishers Communication Group, and charitable organisations such as Age UK, Booktrust, Save the Children and The Prince's Trust. Topics covered by these papers include the benefits of reading for pleasure, children and young people's reading habits, digital exclusion and digital literacy, the economic contribution of public libraries. Bearing in mind that we are only considering here one professional LIS journal, the subject matter of many of the papers written by external agencies seem to be quite similar to that of research conducted by academic staff: as would be expected for a professional journal, the focus often relates to the impact of particular services on the user, and/or on professional development. With this caveat, the CILIP Update subject matter is also not markedly dissimilar to some of the topics that were included in the REF submissions and in the research themes identified by LIS departments, ad discussed in the previous section.

The perceived value of different media to the research process
Within the period 2011-15 the rapid growth of social media and online research communication has arguably been an issue of greater significance to the academic research communities than in the previous five year cycle. Respondents from UK LIS academic departments were asked to consider the value they attributed to different media - including social media and non-peer-reviewed journals - to the academic research process. Opinion was clearly divided as to the significance of the role of social media in particular: "We don't have a collective view on this", "This was a source of contention in the preparation of the REF submission", "mixed opinions to be honest. Most of us find Twitter/FB/blogs etc. to be utterly useless. Younger colleagues do find things like ResearchGate and Academia useful". However, others commented on the capacity of such media to reach a practitioner audience: "[social media are] increasingly significant to the process with researchers using these to make practitioners and academics aware of the research.(e.g., tweeting updates to a blog)", "extremely valuable for dissemination to non-academic, multi-disciplinary, global stakeholders/communities/professionals - we adopt a two-pronged publishing strategy (one in Q1 academic journals, the other in non-academic routes such as these)".

Social media was specifically described by the academics not only as a tool for the dissemination of research findings, but also as a means of engaging non-academic communities with the research process as a whole, "to encourage their involvement in it [research]", "the engagement of these people in research", "as tools for engagement and in some cases data collection". Related to this, LIS academics are clearly also aware of the value of increased online communication with practitioner communities and the general public to the impact component of the REF submission: "extremely valuable for…pathway to impact of research on these [non-academic] communities", "Increasingly significant…with regard to dissemination and impact".

Given the nature of the discipline it is unsurprising that the growth of social media has also been strongly reflected in the focus of LIS research during the period 2011-15. As one respondent noted, 'much more significant [as a development in recent years] has been the use of data emerging from social media and for social media as a research subject and tool in its own right.' Key contributors to this growing area include David Nicholas at Northumbria, Graeme Baxter at Robert Gordon University, Paul Reilly and Farida Vis at Sheffield, and many of the REF outputs submitted by the Wolverhampton group in particular focused on Web 2.0 applications such as MySpace, Twitter and YouTube.

The advent of this new research area has highlighted the need for LIS researchers to have a wide range of methods available to them. Sen and Willett[iii], noted a great diversity in the methods used for empirical LIS research, and this continues to be the case. Thus, respondents from UK LIS departments described a "wide mixture", "a very wide range of qualitative, quantitative and experimental research methods, often using innovative combinations of methods". The most frequently cited methods and approaches included case studies, data analytics, Delphi studies, discourse analysis, documentary and conceptual analysis, ethnography, focus groups, grounded theory, historical source-based research, literature synthesis, narrative storytelling, photo-elicitation techniques, user surveys and usability testing, social media analysis, and the analysis of weblogs. Many of these approaches are exemplified in outputs submitted to REF2014, as are others based on, e.g., sentiment analysis[xx] and social worlds theory[xxi]. The UK's multiplicity of research approaches hence mirrors that observed in LIS research elsewhere in the world.[xxii].

Conclusions
Nicholas concluded his review of 2001-05 LIS research[ii] by summarising the positive and negative messages for the LIS community that had emerged during that period, and it hence seems appropriate to conclude the present review with an analogous summary of the situation as we see it a decade later.

The first positive aspect that Nicholas identified was the greater volume of research that was being conducted and on a wider front. It's not clear to us that more research is being carried out, not least because there has been a reduction in the number of LIS departments in the UK as they are increasingly closed or merged with other departments in their institution. On the other hand, there is no doubt that what research is done covers a very wide range of topics, as

exemplified by the REF submissions, which included not just traditional foci of LIS study, e.g., bibliometrics, information seeking behaviour and publishing; but also work on, e.g., digital humanities, health informatics and social media. The study of Ding et al.[xiii] is also of relevance here given its discussion of the high interdisciplinary content of much LIS research, both in the UK and world-wide. Second, it was suggested that the research was often strategically important for both government and society: this is certainly the case, as the REF submissions again make clear in the shape of their impact components, and governmental pressures are likely to require the HE sector to continue to demonstrate the non-academic value of research. Third, Nicolas noted that some of the work carried out in the UK was of an international standard, and yet again the REF provides striking evidence of the continuing correctness of his opinion. Each of the three components of a submission was graded on a five-point quality scale, the extremal grades corresponding to "Quality that falls below the standard of nationally recognised work" and to "Quality that is world-leading in terms of originality, significance and rigour". All ten of the LIS submissions noted previously in our discussion of the REF were noted as having at least some proportion of their submission as being world-leading, i.e., being not just of an international standard, but being comparable with the very best international research. Fourth, the important role of the AHRC as a "research funder of substance, eminence and influence". This is certainly the case, in that AHRC continues to be of importance, but it is by no means the only source of RCUK funding, with both EPSRC and ESRC being more appropriate for funding some types of LIS research. The final point noted by Nicholas was that the advent of the RAE (as it then was) had resulted in an improvement in the quality of research in HEIs, and this has certainly been the case in LIS (as was already noted by Sen and Willett in their review covering of the period 2006-2010).

Turning now to the negatives, the first two, linked points were that obtaining research funding had become extremely competitive and that it involved approaching a much wider range of potential funding sources than had been the case in the past when there had been agencies, such as Resource or the British Library, with a specific remit to support LIS research. This certainly continues to be so, as we have discussed above. Nicholas went on to suggest that the quality of LIS research was being questioned, as compared to work in other subject areas. Willett[v] noted that while LIS might fare poorly when compared with purely academic disciplines, its performance was entirely comparable to that in other disciplines with a strong vocational component. That said, his comparison was based on the grades obtained in the 2008 Research Assessment Exercise, and the changes that were made for REF2014 make it difficult to repeat exactly this comparison; however, the grades for the entire UoA 36 (of which LIS formed only a small part) were no different from the other nine UoAs in the arts and humanities panel in REF2014.

Nicholas also noted the increasing use that funding agencies were making of LIS consultancies, rather than academic departments, and that as "consultants tend not to publish in the peer-reviewed literature" this was having a negative effect on the quantity of research papers produced. Whilst it is clear that the changes to the funding environment noted above have led to a greater focus for some funding bodies on short-term consultancy and project

evaluation than on longer-term empirical research, LIS academics continue to be creative in identifying sources of research funding and we have not found particularly strong evidence to suggest that LIS consultancies were taking the largest share of the "research cake" (to use Nicholas' term). And although we would agree that publishing in peer-reviewed journals tends not to be a priority for external agencies, our review of the content of CILIP Update between 2011 and 2015 indicates that consultants are far more likely to report the findings of their research in the professional press.

The changing economic, political and social environment that has characterised the UK in the period 2011-15 has presented the LIS research community with several substantial challenges. Examples include the need to obtain funding, to demonstrate the quality of their research, and to communicate the impact and the relevance of their research to non-academic communities. It is to be hoped that the community will be able to continue to meet these, and new, challenges in future years.

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[i] David Nicholas, 'Research' in John H. Bowman (ed.), British librarianship and information work, 1991-2000. Aldershot: Ashgate, 2006, pp. 369-386)..

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