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## **Introduction**

Librarians increasingly find themselves supporting researchers in discovery, engagement and preservation not only of their publications but also their research data. This paper will outline how the involvement of the Bodleian Libraries at the University of Oxford in developing new services for research data management (RDM) illustrates this. It will also offer reflections on what such additional support means for academic librarians. There are a range of RDM developments being carried out - under the banner of Research Data Oxford - but we will specifically consider support offered by subject consultants and a series of research data management training workshops. These are of interest because they build on the traditional roles of those seen as a central source of support: librarians.

The need to reshape library roles, teams and collections to accommodate developments in support for research data and its management is discussed. Additional actions being carried out within the Bodleian Libraries to help further meet these needs are outlined and include the development of the role of a Data Librarian and engagement of a network of librarians with this expanding area of professional knowledge. All this feeds into an evolving series of training workshops; the delivery and content of which will be discussed in this paper. Our review of what has been achieved so far will provide fellow practitioners with valuable lessons and pointers to consider when considering support within their own institutions.

## **Literature review**

Supporting research data is changing library work in both Europe and North America. This is supported by a review of the literature. Some authors position the argument in relation to current needs of academic scholarship such as the Open Access agenda (Cole & Evans, 2014) or Big Data (Federer, 2016; Sawhney, 2014). Others discuss data management as an emerging field in need of support or promotion in itself (Pryor, Jones, & Whyte, 2013) or with a major impact on the work of librarians (Rice & Southall, 2016). Appendix one lists recent literature providing further reading and indicates how important RDM has become as a subject to research showing the many developments across universities.

## **Bodleian's Data Librarian**

The Head of Research and Learning Support and of the Social Sciences Libraries at the Bodleian Libraries crafted the role of data librarian in 2013 in order to meet a growing need identified as part of a strategic review and to increase visibility of the library in managing services that supported researchers' use of data. This was concerned with support in finding and accessing data (or e-resources) the library was increasingly committing itself to. There was also a desire to develop advisory services to assist in the more effective creation, collection and management of digital data by academics. The post is more common within universities in the USA, although there the focus tends to be on collections development and curation of small specialised data collections sometimes outside central library or information services (Rice & Southall, 2016). The intention at Oxford was to develop a role that gave focus to research data within the main library both for researchers and for librarians.

## **The Bodleian context**

The library service at the University of Oxford has a long and established history (<https://www.bodleian.ox.ac.uk/bodley/about-us/history> [Accessed 8 December 2016]). The Bodleian Libraries comprises the historic Bodleian, a large special collections department and a network of discipline-based university libraries which offer support in resource discovery and provide access across a wide range of subject collections including physical and life sciences, mathematics, medical sciences, humanities and social sciences. The University's library services also includes some departmental libraries and a group of over 40 individual libraries belonging to colleges or permanent private halls.

In the course of providing these library services a wide range of traditional approaches are employed such as print collections development, catalogue promotion and the maintenance of an effective network of subject consultants. As new areas of academic scholarship have emerged the Bodleian Libraries has sought to be responsive to these changes. This has sometimes taken the form of meeting demands from readers for support or of addressing needs that are less well recognised by them but still important. The emergence of research data management is an example of such an area. This may give the impression that this is a completely new area for research support for libraries when in fact it is a mixture of established practices with a few novel themes. It is the interest in focussing support for this within libraries rather than, for example, IT Services which is new.

One major reason for the growth in library support for research data management is external expectations. As Whyte & Tedds (2011) describe it this is

“... motivated by the driving principle of data as a public good. This shift is seen in the concerns of policy-makers, and in changes in legislation and its implementation. The needs are being addressed through coordinated action by funders including the UK Research Councils, charities and JISC, with significant responsibilities falling to HEIs and individual researchers.”

Most research funders have issued data policies, for example the Economic and Social Research Council (ESRC) expect their grant holders to make data available for re-use, and the University of Oxford has required its researchers to comply with its policy on the management of research data since 2012 (<http://researchdata.ox.ac.uk/university-of-oxford-policy-on-the-management-of-research-data-and-records/> [Accessed 7 December 2016]). At the time of writing, RDM strategies have been adopted by most Higher Education institutions (HEI). This includes almost all the Russell Group universities. Generally these policies are modelled on the Research Councils UK (RCUK) Common Principles on Data Policy (2015) and driven by strict funding requirements which demand the implementation of formal RDM frameworks (Hickson, Poulton, Connor, Richardson, & Wolski, 2016). The stipulations of the main funding bodies are featured on 'Research Data Oxford' <http://researchdata.ox.ac.uk/> [Accessed 2 December 2016] – the focus for data management advice at the University of Oxford. Funding requirements have also been a driver for RDM strategies amongst US academic institutions (Dietrich, Adamus, Miner, & Steinhart, 2012).

Driving change through funder expectation and even requirements has had the effect of further encouraging research support at a local institutional level rather than through national data centres or discipline-based archives. This commitment to developing RDM as a service - with strong links to IT and Research Services - but as one based with the library recognises the library's central role in nurturing academic research and the value of building on its existing relationships with academics.

### **Reshaping library roles**

Out of a range of 27 UK HEI RDM policies reviewed, some were more explicit than others regarding the extent to which research data management falls under the aegis of library services. The University of Edinburgh has integrated RDM into its libraries and its Academic Support Librarians assist with all aspects of RDM (2015). In 2016 continued developments there led to the launch of a new research data service suite of webpages - <http://www.ed.ac.uk/information-services/research-support/research-data-service> [Accessed 8 December 2016]. The University of York library has a “Research Support Team” (University of York, n.d.) Newcastle University declares: “The RDS (Research Data Service) is a four-

way partnership between the Library, Research & Enterprise Services, University IT Service (NUIT), and Faculties” (2017). The University of Oxford defers RDM to an RDM Delivery Group, which comprises members of its IT Services, Research Services and Bodleian Libraries, including its Data Librarian. Similarly, the London School of Economics and Political Science, Cambridge University, the University of Birmingham, King’s College London, the University of Durham and Imperial College London have all incorporated RDM into their library services to some degree. However this is not always the case, as some policies neglect to mention such services at all - even if there may be some involvement in practice (University of Nottingham, University of Bristol, Cardiff University and University of Liverpool). Literature in this area suggests that RDM has become more prominent in academic libraries, which are particularly well placed to provide “advisory, policy support and training service development.” (Sawnhney, 2014) as well as the potential for an institutional data repository (Cox, Verbaan, & Sen, 2014). This growth has been attributed in part to the growing prevalence of e-resources (Cox, Verbaan, & Sen, 2012). However, the literature also highlights some potential obstacles to the development of RDM within the library arena, including but not limited to a lack of research expertise amongst LIS professionals (MacMillan, 2015).

Auckland (2012) amongst others has argued for the need to reconsider the role of the academic librarian and in particular subject specialists to ensure it maintains its relevance to the changing demands of the academic landscape. She noted “A shift can be seen which takes Subject Librarians into a world beyond information discovery and management ... to one in which they play a much greater part in the research process ... and in the management, curation and preservation of research data” (p. 8). Delivery of training aimed at increasing familiarity, confidence and even expertise in RDM is as an acknowledgement of this shift and is one solution to overcoming potential obstacles. It also benefits from the possibility of using existing methods and training frameworks.

### **Bodleian iSkills programme: courses for researchers**

One of the initiatives at the University of Oxford to promote RDM uses an established framework of workshops for postgraduates and researchers known as the iSkills programme. This is a series of bookable training workshops delivered every term that cover information discovery and scholarly communications such as measuring research impact, open access, reference management tools and methods for keeping up to date with new research. Some of the topics are aimed at specific disciplines while others cut across them.

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Initially the RDM workshops were promoted solely as part of the Social Sciences Doctoral Training Centre programme, but were later also incorporated into the broader iSkills programme in order to take advantage of the well-established and effective promotion routes and booking system. Some workshops such as the 'Research Skills Toolkit' are jointly staffed by library and IT staff. The wider use and familiarity of this common booking system has meant that attendance is now broader, including students in all disciplines and research support staff from around the university.

Although currently provided by Bodleian Libraries staff, the RDM workshops follow on from IT-led projects. The JISC funded Sudamih project ([http://sudamih.oucs.ox.ac.uk/docs/Sudamih\\_FinalReport\\_v1.0.pdf](http://sudamih.oucs.ox.ac.uk/docs/Sudamih_FinalReport_v1.0.pdf) [Accessed 26 February 2017]) developed training and software to help researchers in the Humanities better manage their data. The DaMaRO project (<http://blogs.it.ox.ac.uk/damaro/> [Accessed 26 February 2017]) was a collaboration between IT, academic and library staff chiefly focussed on developing data management tools but it also ran a series of face-to-face training events, which to some extent formed the precursor for our current RDM workshops.

To this local background, the Data Librarian brought experience of managing research data and providing training outside of Oxford. Discussing possible content and information literacy approaches, with the librarian coordinating a skills programme for doctoral students in the Social Sciences, resulted in the series of team taught workshops based around RDM 'hot topics' such as using confidential data, locating data for secondary use, and digital preservation. With each iteration tweaks have been made to the workshops based on anecdotal and formal feedback plus reflection by the training librarians.

With research data management of interest to researchers across disciplines and with support arising from work done initially from collaborative efforts with IT Services, the current RDM workshops sit well within the broader programme of complementary training offered by Library and IT staff. The lead presenter of these workshops is the Bodleian's Data Librarian but participants are encouraged to contact their subject librarian as the first port of call, and the RDM tasks that are part of the Research Skills Toolkit are supported by various staff. This serves to reinforce the message of the training aimed at library staff, namely that RDM is an area that library staff across the board can support to some extent.

Each session is built around presentation slides and a number of group exercises which aim to increase confidence in data discovery and creation (See appendix for iSkills workshop content). Combining these workshops with other areas of research skills training demonstrates that data management is an integral part of good research practice rather than

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a series of technical issues to be dealt with purely by using specific tools and software. As part of research practice RDM finds a natural home in the support networks of the academic library.

One initial problem was a high incidence of cancelled bookings or non-attendance. Workshops would be designed for classes of 12-15 attendees only for small group of four or five to actually attend. This is a common problem experienced by training providers across the University and despite efforts to reduce this, it remains unclear exactly why there is such a high 'no show' rate - feedback responses have produced no particular pattern. It may be that there was a tendency on the part of readers to book a range of courses at the beginning of each term only to find other commitments, such as course assignment deadlines, overtook their initial intentions. Although some of the workshops could run with smaller numbers it often meant group exercises had to be curtailed or lost some of their value. This is one of the areas that were reassessed when the workshop were repeated in subsequent terms.

The location of the workshops also needed consideration. Facilities were needed where online activity via university computers or access to personal laptops was possible. When the courses were delivered for the first few terms they were based within social science library training rooms. However it was noted that when a wider range of locations were used in subsequent terms – often around the city – booking figures as well as actual attendance figures improved. A wider range of disciplines were also represented in those that attended. When training rooms were used in central and 'discipline neutral' locations such as IT Services or the Weston Library, bookings were from a wider range of disciplines. For example, political science students hoping to conduct elite interviews, history students planning to collect oral histories, and research assistants from medical sciences working with patient records.

### **A course for librarians**

Running parallel to RDM training for researchers was the intention to develop workshops for librarians as part of staff development training. The success in delivering iSkills sessions encouraged a similar approach with the Bodleian Libraries subject consultant network. Two workshops were developed that outlined the general principles of data management as an area for expanding professional knowledge for librarians with practical advice and tips on leading themes. The intention was to foster an increased understanding of digital scholarship, RDM issues and where these sit in relation to the work of the academic library and new areas of scholarly activity such as Open Access.

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Workshops were aimed at the subject consultant network, since they provide the initial bridge between library, researchers and academic departments. It was developed as a two part course. Offered once a term as linked pair, the first covered the main principles of RDM and how it developed as a mix of digital resource discovery and preservation. The second section moved beyond principles to address practical areas of support such as options in data encryption or data management planning. Developments in the wider RDM infrastructure at Oxford were covered; the establishment of Research Data Oxford as a web portal and enquiries service with representatives from the Bodleian Libraries, IT Services, and Research Services; creation of an institutional data repository (ORA-Data); and the growing number of data-orientated iSkills sessions.

Comments from sessions delivered in Michaelmas term 2016 indicated that the training created “a better understanding of what RDM means for people who interact with our readers” and helped attendees feel “... better able to advise research students during upcoming induction sessions” and “more informed about the research life cycle and what resources are available for academics and how this impacts on my work”.

This feedback demonstrated an interest and enthusiasm in gaining a better understanding of RDM. In particular it was noted that whilst many attendees did not wish to become expert in the subject they were keen to understand how RDM fits into the work they already did and to increase their confidence in discussing it with readers.

### **Evolution of the course**

Changes in structure and content were made as a result of feedback (see fig. 1). Workshop structure was simplified as attendees noted it had been difficult to find time to commit to two linked sessions. In addition, participants felt that the formal group activity planned into the session was unnecessary because the activity topics had in fact already been usefully addressed by whole class discussion as the workshop unfolded. Therefore future iterations were designed as single 90 minute sessions and repeated twice each term. Secondly, after the first full years' worth of workshops finished in 2014, feedback indicated a wider range of support staff be invited. Subsequently the workshop was open to subject consultants and any other grade of staff working in the area of academic research support. This is congruent with one of the arguments of RDM, that it often encourages a greater involvement in the research data lifecycle. Academic librarians are comfortable with the idea of offering support in resource and data discovery and access but an engagement with RDM allows them to develop deeper involvement with data creation, preservation and dissemination. This may be through liaison with colleagues in IT or research service departments or through direct

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involvement with library based RDM services. This need not be confined to subject consultants either and a consideration of this fact shows why the potential audience for staff development RDM sessions was widened.

Fig.1 Evolution of RDM training for librarians at Oxford

<b>Initial workshops</b> 2 x 60 minute workshop Delivered termly to subject consultants	<b>Changes to workshops</b> 1 x 90 minute workshop Delivered termly to research support staff
<b>Initial Learning objectives:</b> <ul style="list-style-type: none"><li>- recognise research data management as a vital component of academic practice</li><li>- awareness of the University's research data policy and funder requirements</li><li>- introduction to data management planning</li><li>- know how to locate data from a range of data archives</li><li>- greater familiarity with preservation of data, embargoes and access frameworks</li><li>- gain confidence in partaking in the RDM support services offered to researchers,</li><li>- understanding their own role and the role of the Bodleian Data Librarian</li></ul>	<b>Additional Learning objectives:</b> <ul style="list-style-type: none"><li>- promote research data management issues within departments</li><li>- use of DCC DMPOnline</li><li>- better knowledge of Oxford data repository and related services</li><li>- review and comment on RDM support service needs by their subject researchers</li><li>- Understanding of aims of RDO website and their role in suggesting use and content</li><li>- Better understanding of place of RDM in librarianship and institutional activity</li></ul>
<b>Learning format:</b> <ul style="list-style-type: none"><li>- lecture with PowerPoint presentation</li><li>- group discussion</li><li>- group exercises</li></ul>	<ul style="list-style-type: none"><li>- Dropped group exercises</li><li>- creation of more handouts</li></ul>

### Benefits to participants and the library

So far ninety members of the Bodleian Libraries have participated. There is a clear sense of improved understanding regarding RDM and its place in academic librarianship (see fig. 2). It was noted by many attending the workshop that a better understanding of the various practical tools being put in place – such as Oxford's institutional data repository – was a key takeaway.

Fig 2.Post training feedback

<b>Stated reasons for attending</b>	<b>Reported outcomes</b>
Part of personal training plan	Improved confidence in RDM



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Self- motivation	Now able to deal with questions on RDM from readers
Keep abreast of learning developments	Helped me understand the basics of RDM and how it works at Oxford
Ensure knowledge is up to date	Better awareness of support available to readers
Aware of growing importance of the 'data agenda'	Useful briefing ahead of library induction sessions

The sessions also encouraged involvement by subject consultants in further RDM training activity. Some developed briefing sessions for their own staff and readers based on what they learned. In other cases mini-workshops aimed at specific departments or disciplines were set up – for example in Social Psychology, Anthropology and in Education.

Another example of the impact of this continuing workshop can be seen in adaptations of existing resource tools such as Bodleian Libraries LibGuides (<http://libguides.bodleian.ox.ac.uk>). These web based subject and research guides feature recommended resources and tools made available by the University of Oxford. Most subject guides are structured around a set of tabs labelled 'Getting Started' 'Journal Articles', 'E-books and Online Reference', 'Theses & Dissertations' and so on. These have proved to be very popular and are a good way of structuring information on resources and how these are supported by the library. Following the iSkills and staff development workshops a group of subject consultants suggested a new tab be added for RDM. This was discussed and a tab designed that aimed to feature some of the key RDM themes, whilst allowing discipline based customisation and focus, for example:

<http://libguides.bodleian.ox.ac.uk/economics/rdm> or  
<http://libguides.bodleian.ox.ac.uk/engineering>

Overall, these workshops aimed at supportdata staff increased the confidence of librarians across the Bodleian Libraries in supporting researchers in managing their data. Similar efforts to familiarise librarians with the open access agenda have been successful in

involving librarians in the work needed to populate the university's institutional repository - in line with HEFCE policy. RDM joins the portfolio of skills that librarians have a professional responsibility to maintain working knowledge of such as copyright, bibliometrics, and open access. Though some university libraries designate specific roles for these areas, all librarians need an awareness.

### **Impact and next steps**

Improved awareness of RDM has led to new support being provided by subject consultants in briefing departmental facilitators and participating in workshops on funding application procedures for key funders. Similarly, a mixed audience of research practitioners, administrators and subject consultants have also attended other data management events, such as the Data Dialogue one day workshop held at Jesus College (<http://www.ses.ac.uk/2016/12/01/research-crosses-borders/>).

The RDM workshops developed for both researchers and librarians will continue to be provided and will be adapted after each iteration in response to feedback. For example, an additional group exercise comparing sample data management plans (DMPs) is being developed to enhance understanding of this key tool and common funding requirement of data management.

We are also keen to increase the depth of support for data analysis and visualisation. A workshop is planned for library staff led by IT Services with contributions from the data librarian and subject consultants, on topics such as: the library and data analysis; how readers manage research data; visualisation and data preservation.

### **Conclusions**

The roles and training discussed in this article sit within collaborative efforts by the Library, Research and IT Services to provide university wide research data management support. Whilst we would stress the place of collaboration across many of the stakeholders at Oxford it is also true that the library role is key as librarians already participate in most stages of research. The library is the place researchers are comfortable visiting and getting advice, be this ad hoc, individual consultations or training. These opportunities for regular interactions mean library staff are well placed to be the focus of RDM support within a university.

Professional development in RDM leads to stronger integration with existing traditional library support without compartmentalising queries as 'data' and therefore too specialised to be tackled. These issues become part of the everyday knowledge base in a similar way to how literature search advice was once a specialised area.

Service developments mentioned above illustrate the various approaches being used at the University of Oxford to address the requirements of this new area of research support. These are developments which are being led by the Library and which recognise the importance of engaging the skills and interest of both researchers and staff. Our discussion of what has been achieved so far will provide fellow practitioners with valuable lessons and pointers to consider when reviewing the support required within their own institutions.

## Reference list

- Auckland, M. (2012). *Re--skilling for Research*. Research Libraries UK. Retrieved from <http://www.rluk.ac.uk/wp-content/uploads/2014/02/RLUK-Re-skilling.pdf>
- Cole, G., & Evans, J. (2014). University of Exeter research data management and open access training for staff. *ALISS Quarterly*, 10(1), 22–25.
- Cox, A., Verbaan, E., & Sen, B. (2012). Upskilling liaison librarians for research data management. *Ariadne*, 70. Retrieved from <http://www.ariadne.ac.uk/issue70/cox-et-al>
- Cox, A., Verbaan, E., & Sen, B. (2014). Rising to the research data management challenge. *SCONUL Focus*, 60, 42–44.
- Dietrich, D., Adamus, T., Miner, A., & Steinhart, G. (2012). De-mystifying the data management requirements of research funders. *Issues in Science & Technology Librarianship*, 70.
- Federer, L. (2016). Research data management in the age of big data: Roles and opportunities for librarians. *Information Services & Use*, 36, 35–43.
- Hickson, S., Poulton, K. A., Connor, M., Richardson, J., & Wolski, M. (2016). Modifying researchers' data management practices. *IFLA Journal*, 42, 253–265.
- MacMillan, D. (2015). Developing data literacy competencies to enhance faculty collaborations. *LIBER Quarterly*, 24(3), 140–160.

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Newcastle University. (2017). Research data management. Retrieved from <http://www.ncl.ac.uk/res/research/gov-ethics/rdm/>

Pryor, G., Jones, S., & Whyte, A. (Eds.). (2013). *Delivering research data management services: Fundamentals of good practice*. London, England: Facet Publishing.

Research Councils UK. (2015). RCUK common principles on data policy. Retrieved from <http://www.rcuk.ac.uk/research/datapolicy/>

Rice, R., & Southall, J. (2016). *The data librarian's handbook*. London, England: Facet Publishing

Sawnhney, S. C. (2014). New directions: Research data management, big data and librarians. *ALISS Quarterly*, 9(2), 21–25.

University of Edinburgh. (2015). Research data management policy. Retrieved from <http://www.ed.ac.uk/information-services/about/policies-and-regulations/research-data-policy>

University of York. (n.d.). Research support team. Retrieved from <https://www.york.ac.uk/library/info-for/researchers/support/>

Whyte, A., & Tedds, J. (2011). *Making the case for research data management* (DCC Briefing Papers). Edinburgh, Scotland. Retrieved from <http://www.dcc.ac.uk/resources/briefing-papers>

## Appendix One: Research Data Management and Libraries: Recent Literature

### a. UK

#### i. Journal Articles

- Antell, K. et al. (2014) Dealing with Data: Science Librarians Participation in Data Management at Association of Research Libraries Institutions. *College & Research Libraries*, 75 (4), 557–574.

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- Ashley, K. (2012) Research data and libraries: who does what. *Insights: The UKSG Journal*, 25 (2), 155-157.
- Awre, C. et al. (2015). Research data management as a “wicked problem”. *Library Review*, 64 (4), 356-371.
- Ball, J. (2013) Research data management for libraries: getting started. *Insights*, 26(3), 256-260.
- Boyd, D. (2013) Databris: Towards a Research Data Management Service for the University of Bristol. *ALISS Quarterly*, 8 (3), 3–5.
- Brewerton, G. (2015) Research data management: A case study. *Ariadne*, (74), 1.
- Clements, A. (2013) Research information meets research data management ... In the library? *Insights: The UKSG Journal*, 26 (3), 298-304
- Cole, G. and Evans, J. (2014) University of Exeter Research Data Management and Open Access Training for Staff. *ALISS Quarterly*, 10 (1), 22–25.
- Cox, A. M. and Pinfield, S. (2014) Research data management and libraries: Current activities and future priorities. *Journal of Librarianship and Information Science*, 46 (4), 299-316.
- Cox, A. M. Pinfield, S. and Smith, J. (2016) Moving a Brick Building: UK Libraries Coping with Research Data Management as a “wicked” Problem’. *Journal of Librarianship & Information Science*, 48 (1), 3–17.
- Cox, A. Verbaan, E. and Sen, B. (2012) A new role for academic librarians? Research data management. *Multimedia Information & Technology*, 38 (4), 29-30.
- Cox, A. Verbaan, E. and Sen, B. (2012) Upskilling Liaison Librarians for Research Data Management. *Ariadne*, 70
- Cox, A. Verbaan, E. and Sen, B. (2014) Rising to the research data management challenge. *SCONUL Focus*, 60, 42-44,
- Crilly, J. and Meece, S. (2015) The Role of Library Services in the Collaborative Development of Research Repository and Research Data Management at University of the Arts London. *SCONUL Focus*, 63, 38.
- Dimple, P. (2016) Research Data Management: A Conceptual Framework. *Library Review*, 65 (4/5), 226-241.
- Federer, L. (2016) Research Data Management in the Age of Big Data: Roles and Opportunities for Librarians. *Information Services & Use*, 36 (1-2), 35.

## Training for Research Data Management at the Bodleian Libraries: national contexts and local implementation for researchers and librarians

- Fox, R. (2013) The art and science of data curation. *OCLC Systems & Services: International Digital Library Perspectives*, 29 (4), 195-199.
- Guindon, A. (2014) Research Data Management at Concordia University: A Survey of Current Practices. *Feliciter*, 60 (2), 15–17.
- Henderson, M. E. and Knott, T. L. (2015) Starting a Research Data Management Program Based in a University Library. *Medical Reference Services Quarterly*, 34 (1), 47–59.
- Hickson, S. et al. (2016). Modifying researchers' data management practices. *IFLA Journal*, 42 (4), 253-265.
- Higman, R. Pinfield, S. (2015) Research Data Management and Openness: The Role of Data Sharing in Developing Institutional Policies and Practices. *Program: Electronic Library and Information Systems*, 49 (4), 364-381.
- Hiom, D. et al. (2015) Research data management at the University of Bristol. *Program*, 49 (4), 475-493.
- Jones, S. (2015) Training librarians for research data management support. *ALISS Quarterly*, 10 (3), 20-23.
- Koltay, T. (2016) Are You Ready? Tasks and Roles for Academic Libraries in Supporting Research 2.0. *New Library World* 117 (1), 94–104.
- Lloyd-Jones, H. (2013) The holistic librarian: 23(+ 1) things for RDM at the University of Exeter. *SCONUL Focus*, 59, 10-13.
- MacMillan, D. (2015) Developing data literacy competencies to enhance faculty collaborations. *LIBER Quarterly*, 24 (3), 140-160.
- Makani, J. (2015) Knowledge Management, Research Data Management, and University Scholarship. *VINE: The Journal of Information & Knowledge Management Systems* 45 (3), 344–359.
- Milner, J. (2009) A UK Research Data Service (UKRDS): The Way Forward for Research Data Management? *Serials*, 22 (1), 83–85.
- Pinfield, S. et al. (2014) Research Data Management and Libraries: Relationships, Activities, Drivers and Influences. *PLoS ONE*, 9 (12).
- Rice, R. and Macdonald, S. (2013) Research Data Management Training for Librarians - An Edinburgh Approach. *ALISS Quarterly*, 8 (3), 6-9.
- Sawnhney, S. C. (2014) New directions: Research data management, big data and librarians, *ALISS Quarterly*, 9 (2), 21-25.

## Training for Research Data Management at the Bodleian Libraries: national contexts and local implementation for researchers and librarians

- Stevenson, V. (2012) Approaches to research data management. *SCONUL Focus*, (56), 70-71.
- Stewart, J. and Crossley, J. (2013) Library readiness for research data management. *ALISS Quarterly*, 8 (4), 13-16.
- Verbaan, E. and Cox, A. M. (2014) Occupational sub-cultures, jurisdictional struggle and third space: Theorising professional service responses to research data management. *The Journal of Academic Librarianship*, 40 (3-4), 211-219.
- Wilson, J. A. J. et al. (2010) Developing infrastructure for research data management at the University of Oxford. *Ariadne*, (65).

### ii. Books

- Pryor, G., Jones, S. and Whyte, A. (2013) *Delivering Research Data Management Services: Fundamentals of Good Practice*. London: Facet Publishing
- Research Information Network (2011) *Data Management in Perspective: The Career Profile of Data Managers*. London: Research Information Network.
- *Data management in Perspective: The career profile of social science researchers*. (2011). London: Research information network.
- Mouromtsev, D. and Aquin, M. (2016) *Open Data for Education: Linked, Shared, and Reusable Data for Teaching and Learning*. Cham: Springer International Publishing
- Briney, K. (2015) *Data Management for Researchers: Organize, Maintain and Share Your Data for Research Success*. Exeter: Pelagic Publishing.
- Neylon, C. (2012) *Open Research: Motivation, Theory, and Practice*. London: Henry Stewart Talks.
- Rice, R. and Southall, J. (2016) *The Data Librarian's Handbook*. London: Facet Publishing
- Lynda Kellam, L. and Thompson, K. (eds) (2016) *Databrarianship: The Academic Data Librarian in Theory and Practice*. Chicago ACL

### iii. Library Websites

## Training for Research Data Management at the Bodleian Libraries: national contexts and local implementation for researchers and librarians

- Cardiff University (2015) *Research Integrity and Governance Code of Practice* [Online]. Available from: <http://www.cardiff.ac.uk/research/our-research-environment/integrity-and-ethics> [Accessed 5 December 2016]
- Durham University. *Research Data Management Policy* [Online]. Available from: <https://www.dur.ac.uk/resources/research.office/RDMPolicy.pdf> [Accessed 2 December 2016]
- Imperial College London (2016) *Research Data Management Policy* [Online]. Available from: <http://www.imperial.ac.uk/media/imperial-college/research-and-innovation/research-office/public/Imperial-College-RDM-Policy-%5Bpdf%5D.pdf> [Accessed 2 December 2016]
- Kings College London. *Kings College London Research Data Management Policy* [Online]. Available from: <http://www.kcl.ac.uk/library/researchsupport/research-data-management/RDMPolicy.pdf> [Accessed 2 December 2016]
- London School of Economics [Online]. Available from: <http://www.lse.ac.uk/library/usingTheLibrary/academicSupport/RDM/home.aspx> [Accessed 28 November 2016]
- Newcastle University (2016) *Code of Good Practice in Research Management* [Online]. Available from <http://www.ncl.ac.uk/res/research/gov-ethics/rdm/policy/code.htm> [Accessed 2 December 2016]
- Nottingham Trent University (2014) *Research Data Management Policy* [Online]. Available from: [https://www4.ntu.ac.uk/research/document\\_uploads/172429.pdf](https://www4.ntu.ac.uk/research/document_uploads/172429.pdf) [Accessed 30 November 2016]
- Queen Mary University of London [Online]. Available from: <http://www.its.qmul.ac.uk/support/researchsupport/facilities/index.html> [Accessed 2 December 2016]
- Queens University Belfast (2016) *Research Strategy 2016 - 2021* [Online]. Available from <http://www.qub.ac.uk/home/media/Media,680809,en.pdf> [Accessed 5 December 2016].
- University of Birmingham [Online]. Available from: <https://intranet.birmingham.ac.uk/as/libraryservices/library/services/research/rdm/rdm-principles.aspx> [Accessed 2 December 2016]



## Training for Research Data Management at the Bodleian Libraries: national contexts and local implementation for researchers and librarians

- University of Bristol [Online]. Available from: <https://data.bris.ac.uk/rdm-policy/> [Accessed 2 December 2016]
- University of Cambridge [Online]. Available from: <http://www.data.cam.ac.uk/university-policy> [Accessed 30 November 2016]
- University College London [Online]. Available from: <http://www.ucl.ac.uk/isd/services/research-it/documents/uclresearchdatapolicy.pdf> [Accessed 5 December 2016]
- University of Edinburgh (2011) *Research Data Management Policy* [Online]. Available from: <http://www.ed.ac.uk/information-services/about/policies-and-regulations/research-data-policy> [Accessed 5 December 2016]
- University of Exeter [Online]. Available from: [http://www.exeter.ac.uk/media/universityofexeter/research/researchtoolkit/pdfs/PGR\\_OAa\\_nrdm\\_policy\\_update\\_2014\\_10\\_23.pdf](http://www.exeter.ac.uk/media/universityofexeter/research/researchtoolkit/pdfs/PGR_OAa_nrdm_policy_update_2014_10_23.pdf) [Accessed 2 December 2016]
- University of Glasgow [Online]. Available from: [http://www.gla.ac.uk/media/media\\_435489\\_en.pdf](http://www.gla.ac.uk/media/media_435489_en.pdf) [Accessed 2 December 2016]
- University of Leeds [Online]. Available from: <https://library.leeds.ac.uk/research-data-policies> [Accessed 5 December 2016].
- University of Liverpool [Online]. Available from: <https://www.liverpool.ac.uk/media/livacuk/computingservices/research-data-management/researchdatamanagementpolicy.pdf> [Accessed 2 December 2016]
- University of Manchester [Online]. Available from: <http://www.library.manchester.ac.uk/using-the-library/staff/research/services/research-data-management/policy/> [Accessed 24 November 2016]
- University of Nottingham [Online]. Available from: <http://www.nottingham.ac.uk/fabs/rgs/research-data-management/creating-data/policies.aspx> [Accessed 5 December].
- University of Oxford. *Policy on the Management of Research Data and Records* [Online]. Available from: <http://blogs.bodleian.ox.ac.uk/wp->

Training for Research Data Management at the Bodleian Libraries: national contexts and local implementation for researchers and librarians

[content/uploads/sites/126/2014/01/Policy\\_on\\_the\\_Management\\_of\\_Research\\_Data\\_and\\_Records.pdf](#) [Accessed 2 December 2016]

- University of Sheffield [Online]. Available from:  
[http://www.shef.ac.uk/polopoly\\_fs/1.553350!/file/GRIPPpolicyextractRDM.pdf](http://www.shef.ac.uk/polopoly_fs/1.553350!/file/GRIPPpolicyextractRDM.pdf) University Library Data Management Plan [Accessed 30 November 2016]
- University of Southampton [Online]. Available from:  
<http://www.calendar.soton.ac.uk/sectionIV/research-data-management.html> [Accessed 5 December 2016]
- University of Southampton [Online]. Available from: <http://library.soton.ac.uk/researchdata> [Accessed 5 December 2016]
- University of Warwick [Online]. Available from:  
[http://www2.warwick.ac.uk/services/ris/research\\_integrity/code\\_of\\_practice\\_and\\_policies/research\\_code\\_of\\_practice/datacollection\\_retention/research\\_data\\_mgt\\_policy](http://www2.warwick.ac.uk/services/ris/research_integrity/code_of_practice_and_policies/research_code_of_practice/datacollection_retention/research_data_mgt_policy) [Accessed 5 December 2016]
- University of York (2014) *Research Data Management Policy* [Online]. Available from:  
<http://www.york.ac.uk/about/departments/support-and-admin/information-services/information-policy/index/research-data-management-policy/> [Accessed 5 December 2016]
- University of Edinburgh [Online]. *Edinburgh Research Data Blog*. Available from:  
<http://datablog.is.ed.ac.uk/> [Accessed 28 November 2016]
- UCL [Online]. *Research Data Management Blog*. Available from: <http://blogs.ucl.ac.uk/rdm/> [Accessed 28 November 2016]
- University of Sheffield [Online]. *Research Data Management*. Available from:  
<http://researchdatamanagement.blogspot.co.uk/> [Accessed 28 November 2016]
- University of Cambridge Office of Scholarly Communication [Online]. *Unlocking research*. Available from: [https://unlockingresearch.blog.lib.cam.ac.uk/?page\\_id=2](https://unlockingresearch.blog.lib.cam.ac.uk/?page_id=2) [Accessed 2 December 2016]
- University of St Andrews [Online]. *Library Blog*. Available from: <http://www.st-andrews.ac.uk/libraryblog/category/rdm/> [Accessed 2 December 2016]

## Training for Research Data Management at the Bodleian Libraries: national contexts and local implementation for researchers and librarians

- University of Leeds [Online]. *Managing Research data Blog*. Available from: <https://blog.library.leeds.ac.uk/blog/roadmap> [Accessed 2 December 2016]

### iv. Blog Posts

- Kaye, J. (2016) Finding out what researchers really, really want from a research data shared service. *Research Data Management Blog* [Online]. Available from: <https://researchdata.jiscinvolve.org/wp/2016/11/27/finding-researchers-really-really-want-research-data-shared-service/> [Accessed 28 November 2016]

## b. US/Canada

### i. Journal Articles

- Charbonneau, D. H. (2013) Strategies for data management engagement. *Medical Reference Services Quarterly*, 32 (3), 365-374.
- Dietrich, D. et al. (2012) De-mystifying the data management requirements of research funders. *Issues in Science & Technology Librarianship*, (70).
- Henderson, M.E. and Knott, T. L. (2015) Starting A Research Data Management Program Based In A University Library. *Medical Reference Services Quarterly*, 34 (1), 47-59.
- Moon, J. (2014). Developing a research data management service - a case study. Partnership: *The Canadian Journal of Library and Information Practice and Research*, 9 (1).
- Peters, C. and Dryden, A. R. (2011) Assessing the academic library's role in campus-wide research data management: A first step at the University of Houston. *Science & Technology Libraries*, 30 (4), 387-403.
- Steeleworthy, M. (2014) Research Data Management and the Canadian Academic Library: An Organizational Consideration of Data Management and Data Stewardship. *Partnership: The Canadian Journal of Library and Information Practice and Research*, 9 (1)
- Tenopir, C. et al. (2014) Research data management services in academic research libraries and perceptions of librarians. *Library & Information Science Research*, 36 (2), 84-90.

## Training for Research Data Management at the Bodleian Libraries: national contexts and local implementation for researchers and librarians

- Weller, T. and Monroe-Gulick, A. (2014) Understanding methodological and disciplinary differences in the data practices of academic researchers. *Library Hi Tech*, 32 (3), 467-482.

### ii. Library Websites

- Harvard University [Online]. Available from: <http://guides.library.harvard.edu/dmp> [Accessed 28 November 2016]
- Cornell University [Online]. Available from: <http://data.research.cornell.edu/content/consultants> [Accessed 29 November 2016]
- Princeton University Library [Online]. *Libguides: Research Data Management at Princeton*. Available from: <http://libguides.princeton.edu/rdm> [Accessed 2 December 2016]

### iii. Blog Posts

## c. Other Areas

### i. Journal Articles

- Becker, P. And Furste, F. (2013) Are All Librarians Supposed To Be Computer Scientists Now? Research Data Management, Data Preservation And Data Maintenance, New Tasks. *Bub Forum Bibliothek Und Information*, 65 (7-8), 512-514.
- Chiware, E And Mathe, Z. (2015) Academic libraries' role in Research Data Management Services: a South African perspective. *South African Journal of Libraries & Information Science* 2015, 81(2)
- Holl, A. (2015). International Trends Of Managing Research Data, *Tudományos Es Muszaki Tajekoztatás*, 62 (5), 1.
- Kahn, M. et al. (2014) Research Data Management In South Africa: How We Shape Up. *Australian Academic & Research Libraries* 45 (4),296–308.
- Kennan, M. A., Williamson, K. And Johanson, G. (2012) Wild Data: Collaborative E-Research

And University Libraries. *Australian Academic & Research Libraries* 43 (1), 56–79.

- Kruse, F. And Thestrup, J. B. (2014) Research Libraries' New Role in Research Data Management, Current Trends and Visions in Denmark. *Liber Quarterly: The Journal of European Research Libraries*, 23 (4), 310-335.

## ii. Websites and blogposts

- Australian National Data Service (2016). I'm talking to researchers about their data. Help! What's my pitch? [Online]. Available from:  
[http://www.ands.org.au/\\_data/assets/pdf\\_file/0005/568526/data-librarians-toolkit.pdf](http://www.ands.org.au/_data/assets/pdf_file/0005/568526/data-librarians-toolkit.pdf)  
[Accessed 5 December 2016]
- DCC (2012). Summary of UK research funders' expectations for the content of data management and sharing plans. [Online]. Available from:  
[http://www.dcc.ac.uk/sites/default/files/documents/resource/policy/FundersDataPlanReqs\\_v4%204.pdf](http://www.dcc.ac.uk/sites/default/files/documents/resource/policy/FundersDataPlanReqs_v4%204.pdf) [Accessed 5 December 2016]
- GUY, M. (2013). RDM Training for Librarians [Online]. Available from:  
<http://www.dcc.ac.uk/sites/default/files/documents/publications/case-studies/Training-for-librarians-case-study.pdf> [Accessed 5 December 2016]
- Research Councils UK (2015) RCUK Common Principles on Data Policy. [Online]. Available from: <http://www.rcuk.ac.uk/research/datapolicy/> [Accessed 5 December 2016]
- Universiteit Leiden [Online]. *Leiden Research Data Blog*. Available from:  
<http://blogs.library.leiden.edu/researchdata/> [Accessed 2 December 2016]

## Summary

Research Data Management (RDM) policies or strategies have been adopted by Higher Education institutions (HEI) with few exceptions. This includes all 24 Russell Group universities considered in this review, with the exception of Queen Mary University of London. Most of these RDM policies are modelled on the Research Councils UK (RCUK) Common Principles on Data Policy (2015) and driven by strict funding requirements which demand the implementation of formal RDM policies (Hickson, S. et al. 2016). The stipulations of the main funding bodies have been outlined by the Digital Curation

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Centre (DCC) (2012). Funding requirements have also been a driver for RDM strategies amongst US academic institutions (Dietrich, D., Adamus, T., Miner, A., & Steinhart, G. 2012).

HEI RDM policies state that good data management practice is necessary for “research excellence and integrity” (University of York), transparency (University of Manchester), reliability (University of Sheffield) and the organisation and preservation of research data (Harvard University).

The literature indicates that RDM has become more prominent in academic libraries, which are particularly well placed to provide “advisory, policy support and training service development.” (Sawnhney, 2014) as well as data repositories (Cox, A. Verbaan, E. & Sen, B, 2014). This growth has been attributed in part to the growing prevalence of e-Resources (Cox, A. Verbaan, E. & Sen, B, 2012). However, the literature also highlights some potential obstacles to the development of RDM within the library arena, including but not limited to a lack of research expertise amongst LIS professionals (Cox, A. Verbaan, E. and Sen, B, 2014).

Of 27 HEI RDM policies examined, some were more explicit than others regarding the extent to which research data management falls under the aegis of their library services. The University of Edinburgh has integrated RDM into its libraries and its Academic Support librarians assist with all aspects of RDM (2011). The University of York library has a “Research Support Team” (2014). Newcastle University declares: “The RDS is a four-way partnership between the Library, Research & Enterprise Services, University IT Service (NUI), and Faculties” (2016). The University of Oxford defers RDM to an RDM Delivery Group, which comprises members of its IT services and Bodleian libraries, including its Bodleian data librarian. Similarly, the London School of Economics, the University of Birmingham, King’s College London, the University of Durham and Imperial College London (2016) have incorporated RDM into their library services to some degree. Conversely, some policies neglect to mention library services at all- even if there may be some intersection in practice (University of Nottingham, University of Bristol, Cardiff University and University of Liverpool).

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### Appendix Two: Details of RDM iSkills programme content

<b>Managing Social Science research data</b>
Good research data management is a vital component of academic practice. Part of this is the principle that the data used to develop the arguments and outcomes of your research should, where possible, be effectively stored, preserved and usable. This session introduces the University's research data policy and outlines the practical impact this will have on the work of researchers. Some of the tools in preparation to meet the requirements will be outlined, as well as services that are already available. This session is not only essential during your DPhil but will be invaluable if you plan to continue in research as a career.
Objectives:
<ul style="list-style-type: none"><li>• Understand common dangers and pitfalls of digital data</li></ul>
<ul style="list-style-type: none"><li>• Understand key principles in organising your data effectively</li></ul>
<ul style="list-style-type: none"><li>• Produce a data management plan</li></ul>
<ul style="list-style-type: none"><li>• Understand funder requirements</li></ul>
<ul style="list-style-type: none"><li>• Understand issues around preserving data, embargoes and access restrictions</li></ul>
<ul style="list-style-type: none"><li>• Access Oxford based tools for research data management</li></ul>

<b>Discovering and depositing Social Science research data</b>
This session provides an opportunity for doctoral students to learn about using Social Science data archives to inform their research. It will also outline the workings of the University of Oxford's institutional data repository, ORA-Data.
Objectives:
<ul style="list-style-type: none"><li>• Locate and cite data from a range of data archives</li></ul>
<ul style="list-style-type: none"><li>• Have an understanding of the benefits and operation of ORA-Data</li></ul>
<ul style="list-style-type: none"><li>• Provide feedback on the usability of ORA-Data deposit mechanism</li></ul>

<b>Get managing your data off to a good start with this introduction to MANTRA</b>
MANTRA is an acclaimed online independent learning course which provides guidelines for good practice in research data management. This workshop will discuss research data management as an integral part of the research process; give an introduction to MANTRA; and then give an actual opportunity to begin the online course.
Objectives:
<ul style="list-style-type: none"><li>• Understand key issues in research data management</li></ul>
<ul style="list-style-type: none"><li>• Use MANTRA to further your research data management practice</li></ul>

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### **Working with sensitive research data**

A workshop outlining some of the key principles to bear in mind when working with sensitive or restricted research data obtained from a third party source such as a data archive. This session will also be of interest to those creating data they consider sensitive or confidential, who want to know how best to go about it. Examples of scenarios drawn from the research of participants are particularly welcome. The role of support services at Oxford will also be outlined and in particular the role of the Bodleian Data Librarian.

Objectives - By the end of the session you will:

- Understand key best practice principles when working with sensitive or restricted research data
- Understand issues around creating original data
- Use informed consent agreements
- Maximise the usage potential of data
- Understand key strategies for protecting data including embargoes, vetting and restrictions
- Use archived data and understand access conditions