View from across the pond

CHAPTER 19

View from Across the Pond:
A UK Perspective

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WHEN REFLECTING ON the UK perspective, it may be useful to compare the experiences of North American data services with those of the UK in particular, and Europe more generally. The role of the academic library in the provision of data services has changed in recent years in the UK, where unlike North America, national data services and archives have predominated as the European model of data support for decades. The UK Data Archive (UKDA) and other national service providers have contributed to the knowledge and expertise across British institutions that are now struggling to develop local research data services. Those few UK institutions that have hosted data library and equivalent services are in a strong position to roll out new types of research data solutions in their institutions and serve as a role model for others.

UK national funding organisations play a crucial role in creating drivers for cultural change toward both open access publishing and research data management and sharing. Many research institutions have responded to funding council expectations regarding policy, implementation, and support for data management planning through investment in both IT infrastructure and new data librarian and data management coordinator job posts. However, many of these new posts are reactive to the funders' mandates and do not extend the data librarian's role to its more traditional support work of helping staff and student researchers find, access, and analyse secondary sources of research data. This is despite the growing trend of cross-disciplinary computational science and the increasing tendency for disciplines beyond the social sciences to crunch numbers from existing sources of data.

The European Model

Participants in the international community of social science data providers and

supporters will have noticed a distinct difference in the shape of academic data services on opposite sides of the Atlantic since their establishment in the 1960s and later. Where small, local academic data libraries proliferated in North America, Europe fostered centralised, government-funded data archives. This probably reflected differences in how higher education was funded in general, with European universities more heavily tied to the public purse and North American universities more often privately funded and competing freely in the marketplace. Thus, as a rule we have European data *archivists* and North American data *librarians* serving social scientists who require access to secondary datasets such as survey and census data. Exceptions to the rule include the large American data archive, Inter-university Consortium for Political and Social Research (ICPSR), based at the University of Michigan, which is not generally funded by the government but by institutional memberships, and the small but growing number of data librarians based in UK universities.

The expertise developed within the centralised European data archives has been extended and consolidated over time through cooperation and communication through the Consortium of European Social Science Data Archives (CESSDA), as well as the International Federation of Data Organisations (IFDO), the International Association for Social Science Information Services & Technology (IASSIST), and other bodies. CESSDA was founded in 1976 as an informal umbrella group. Today it is a permanent legal entity funded by its member states: Austria, Czech Republic, Denmark, Finland, France, Germany, Lithuania, the Netherlands, Norway, Slovenia, Sweden, Switzerland, and the United Kingdom (with the Slovak Republic as an observer). Hosted in Bergen, Norway, the consortium consists of thirteen European countries with designated service providers working to harmonise their holdings and procedures and to support less well-resourced data archives in other European countries. Many of their holdings consist of government-produced surveys and cross-country surveys such as the Eurobarometer series, as well as datasets produced by academic researchers. CESSDA has always worked toward metadata standardisation; it has a search and browsable pan-European data catalogue, and has developed a multi-language social science thesaurus (http://cessda.net/CESSDA-Services/Resources/Data-Catalogue).

In Europe the social sciences have generally opted to build their own infrastructures for data use, focusing on survey and other quantitative datasets with highly structured metadata, particularly metadata using standards such as the Data Documentation Initiative (DDI), once known as the "codebook standard." As is discussed in another chapter,† national data archives (including ICPSR in the US) have played a major role in developing DDI, ensuring the standard

† For more information about DDI, see the chapter in this volume by Leahey and Fry called "Metadata for Social Science Data: Collaborative Best Practices."

helps agencies process datasets throughout a curation lifecycle, as well as improve access by providing XML metadata that allow datasets to be fully marked up at the variable level and then browsed, subsetted and even analysed online via web applications.‡ Now that the social sciences are entering the era of Big Data, there may be even more reasons for researchers to work together across disciplines. This is both because of the methodological challenges presented by new forms of computational-based research and the multidisciplinary nature of many contemporary "grand challenges," such as climate change and the results of globalisation.

The advent of Open Data in governments has led to the perceived need for more secure data infrastructures to be built to safeguard against potentially damaging data disclosure about individual human subjects, a problem that the social sciences shares with clinical research. The ability to combine data from different sources offers new methodological promise even as it increases the potential for unethical disclosure. The European Data Protection Directive is privacy legislation which ensures that the need to protect data subjects is a legal, as well as an ethical, obligation for all European states. In the UK, this is policed by Information Commissioner Offices that have the power to mediate disputes about both data protection and freedom of information and can punish (usually through fines) data controllers found to be mis-handling personal data.

An update to the European Data Protection Directive has been agreed on by the European Parliament, Council of Ministers, and European Commission as part of an overhaul of the 20-year-old legislation to take into account newer technologies such as cloud computing and social media, as well as the impact of increasing globalization. The General Data Protection Regulation (GDPR) is due to be finalised by spring 2016, with enforcement to begin in spring, 2018. Research and health organisations were involved in developing the current solutions for ethical, secure data access, especially to medical records, and have been lobbying strenuously for the continuation of the research exemption in some form, which allows some research in the public interest to go ahead without explicit consent.[1] For example, the ability to link administrative records by individual identifiers combined with a system of careful governance for approving access to this sort of linked data has led to innovative new services for providing safe access to medical, welfare, and other important government held records about individuals to approved researchers. Such linkage and access would not be possible if the law determined that all research subjects needed to consent in advance to their data being used for any particular research project.

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‡ The system used by the UKDA is Nesstar (www.nesstar.com). Nesstar has various software modules—free and for purchase, developed and owned by the Norwegian Social Science Data Services.

The UK Data Archive

The Social Science Data Bank established at the University of Essex in 1967 was itself an exception to the European model in that it, like ICPSR, was based at a university rather than a government department. With a complement of over 70 staff, the UK Data Archive, as it is known today, has become an internationally regarded centre of expertise in social science data acquisition, curation, and access, as well as a repository of research data management knowledge for both its primary funder, the government-funded Economic and Social Research Council (ESRC), and its grant recipients (researchers in UK institutions). The archive holds several thousand historical and contemporary datasets, including key national and international survey data collections, international databanks, census data, and qualitative data. While government surveys account for the majority of datasets accessed, ESRC has had a longstanding policy that its grant recipients are required to offer all data, including data derived from existing datasets, to the archive for deposit. The archive does not in practice accept all datasets offered, though in the last few years it has set up a self-deposit repository (ReShare) with a broader acceptance policy. More recently, ESRC has updated its data management requirements to allow some of the data creators they fund to deposit data into their institutional repositories instead, given certain circumstances.

Balancing National and Local Support in the UK

In the United Kingdom, the UKDA has always been the standard bearer for quality service provision for social science data. The Essex-based organisation has consistently won bids to be the ESRC's data archive of choice over four decades. In the last decade, as part of a consolidated funding arrangement, it has entered into collaborations with other specialist data providers† to offer a broader menu of services, such as international macrodata and population census data, under the umbrella of the UK Data Service (UKDS). UKDA also champions data archiving standards and guidelines for research data management best practices in the UK and Europe.

Like its European counterparts, the UKDA has developed a direct relationship with social science data users in terms of raising awareness, training, registration and data delivery, and omitting institutional liaisons whenever technically

† Currently these include Jisc (formerly Mimas) and the Cathie Marsh Institute for Social Research at the University of Manchester, EDINA at the University of Edinburgh, the School of Geography at the University of Leeds, Geography and Environment at the University of Southampton, and University College London.

feasible. This is in contrast to the ICPSR model of a consortium of universities paying for the services of a social science data archive in the US provided through the role of organizational representatives, and to the Statistics Canada Data Liberation Initiative, which has a programme for training librarians to support data requests.‡ Because the UKDA service is free for all members of UK higher education institutions, no institutional subscriptions are required, nor are there librarians acting in a direct liaison role.§

While perhaps efficient, this arrangement's downside has been the general lack of institutional capacity to support the use of social datasets in secondary analysis, in contrast with the best North American research institutions. For example, as part of a larger investigation into capacity-building needs in England, Wales, Scotland, and Northern Ireland for uptake of quantitative social science research methods funded by the ESRC, a 2008 targeted survey of library and computing professionals at fourteen Scottish universities led to responses from nine institutions about levels and kinds of support for data analysis in the social sciences.[2] The study found that provision of detailed support for an individual's use of quantitative data sources was low, though these results were self-reported and not independently verified. Only one institution provided support in all the areas listed in Table 19.1, the same one that had a data library service (University of Edinburgh).

Table 19.1. Types of Support Provided by Library or Computing Staff (n = 9)

Type of Support Offered	**Number Offering Support**
Identifying appropriate service/website based on user's query	5
Instruction/assistance in use of search/download interface	5
Downloading/subsetting/reformatting data on behalf of user	4
Troubleshooting problems using data (e.g. in analysis packages)	2
Consultation on methods or research question	2
Assistance with understanding data documentation or codebooks	1

‡ For more information on Statistics Canada and the Data Liberation Initiative, see the chapter in this volume by Hill & Gray called "The Academic Data Librarian Profession in Canada: History and Future Directions."

§ The role of site representative did exist up until the 2000s, when datasets needed to be delivered to a stable postal address on portable media (tapes then CDs and DVDs). Some training in the role was offered, though in the author's experience it was a little understood and peripheral role for many of the librarians and computing officers who found themselves performing it.

Learning from North America

Those few who have had a dedicated data support role in UK universities, such as data librarians and data managers, have often looked to North America for models of support. A couple of years after his appointment to Edinburgh University Data Library in 1983, Peter Burnhill looked at both sides of the Atlantic in his paper for the Librarians and Statisticians Committee of the Library Association and the Royal Statistical Society, "Towards Data Libraries in the UK."[3] A survey statistician himself, he noted the importance of social scientists' own initiative in setting up data libraries and archives to help control access to the burgeoning machine-readable data files (MRDF)† that were the basis of their research. In the UK he pointed to the Department of Government at Essex University and the Department of Politics at Strathclyde University as the "driving force" of the data services that were developed there. He quoted Judith Rowe from the Princeton University Data Library in the US regarding how such services often cropped up outside the controlled library environment: "They usually existed outside the Library and were totally lacking in library procedures for collection, management or bibliographic control."[4] He also called for a union catalogue for data libraries, noting the importance of Sue Dodd's contributions to normalising cataloguing procedures for MRDF.

A decade later, Simon Brackenbury, a History graduate appointed as data librarian at the London School of Economics, was tasked with designing a data library service for the British Library of Political and Economic Science, under the direction of Jean Sykes. After consulting with UK Data Archive staff he identified three sites in the UK which provided deeper data support than that of site representative—the Universities of Edinburgh, Plymouth, and Oxford—and also toured data libraries in the US and Canada‡. His observations and recommendations were written up concisely in his paper, "Ways of Supporting Data Use in the Social Sciences," in which he summarised his visits and covered such varied topics as levels of support, national versus local models of support, staff backgrounds and qualifications, most popular data, storage and media, collection development policies, help for finding data, software, and involvement with taught courses.[5]

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† This was the common parlance of the time; MRDF meant digital data files that requires software code to render and manipulate them, such as data formatted by SPSS.

‡ The bridge across the Atlantic has been travelled many times, including in 1998 when a data librarian from the University of Wisconsin (the author) took up the vacant post of data librarian at the University of Edinburgh, and in 2014 when another University of Edinburgh data librarian, Stuart Macdonald, completed a 6-month temporary appointment at the Cornell Institute for Social and Economic Research (CISER) for the purpose of professional knowledge exchange. At the same time Laine Ruus, retired data librarian from University of Toronto, filled the vacancy at Edinburgh, extending the knowledge exchange further.

DISC-UK and the Emergence of UK Data Librarians

In 2004 a group of five academic data professionals (data librarians and data managers) based in UK universities formed DISC-UK (Data Information Specialists Committee—United Kingdom) as a "talking shop" to overcome their professional isolation in between international IASSIST conferences,§ and to compare notes on service provision. Occasional face-to-face meetings were held at the London School of Economics, Oxford University, and the University of Edinburgh, and later Southampton University.

The group engaged in a formal collaboration which was funded nationally as part of a programme of activity to enhance existing institutional repositories across UK higher education institutions. The project, called DISC-UK DataShare (2007-09), involved data librarians, data managers, repository librarians, and technical staff at the four institutions to set up exemplars to show that "institutional repositories can improve impact of sharing data over the internet," among other aims.[6] The project helped to raise the profile of data librarians in the UK, and caught the bleeding edge of libraries entering the realm of research data management support in the UK. A common rhetorical question heard at UK data-related events in those years was, "Should libraries be involved in data support?" The answer was certainly not self-evident at the time. Although this project was arguably ahead of its time, a number of deliverables from the project (http://www.disc-uk.org/deliverables.html), along with a handful of other data-related projects in the same program, laid groundwork for future programs to help institutions create policies and infrastructure for data management. These programs were funded by Jisc¶ under the rubric of *Managing Research Data* between 2009 and 2013.

After the project, the participants went in separate directions and the DISC-UK "talking shop" came to an end. However, by this time momentum was building for libraries to get involved in data support; the UK Digital Curation Centre—set up in 2004 as a national centre of expertise—was maturing and organising training and events; the original purpose of the group in dealing with professional isolation was gradually becoming a phenomenon of the past.

During this time Jisc commissioned a report to look into the skills needed by and the academic career incentives (or lack of incentives) for data managers, or scientists whose focus was on data curation rather than publication. This led

§ IASSIST, or the International Association for Social Science Information Services and Technology, is an individual membership organisation for social science data librarians and data archivists world-wide.

¶ Jisc, formerly the Joint Information Systems Committee, is itself largely funded by the Higher Education Funding Council for England as well as the equivalent organisations in the other UK countries. Its services and innovation programmes have helped build and strengthen the information infrastructure of UK 'higher and further education' institutions since the 1990s.

to the landmark report, *The Skills, Role and Career Structure of Data Scientists: An Assessment of Current Practice and Future Needs*.[7] The authors had heard of DISC-UK and the DataShare project, and after interviewing a few participants, wrote a section of the report on "the training and supply of data librarians." Suddenly a large proportion of the library community was aware that "although there are some individuals in the UK who are called data librarians, it is thought these currently number around five!"[8] Considering the small number, and that some of the five had other job titles, this was a slight embarrassment, but fortunately the report outlined the need for more and also called for training to be introduced in the library schools.

The Role of Research Funders

For many years, only two or three of the seven Research Councils UK (RCUK) members explicitly supported data sharing by their funded research projects: the Economic and Social Research Council, through its funding of the UK Data Archive and related services; the Natural Environment Research Council, through its network of discipline-specific data centres and long-standing data policy; and the Arts and Humanities Research Council, which funded specialised data archives under the umbrella of the Arts and Humanities Data Service from 1996 until 2008 when it unceremoniously ceased its funding (although funding for the Archaeology Data Service has continued).

However, as a member of the OECD the UK government had to take note of the seminal report *OECD Principles and Guidelines for Access to Research Data from Public Funding*,[9] which set out the principle that publicly funded research should be made publicly available. Moreover, the growing open access (to research publications) movement, combined with data management and sharing mandates by US government funders such as the National Institutes of Health (NIH) and the National Science Foundation (NSF)—and before that, the Australian government—were bound to shake up long-held perceptions of academic norms. Finally, the value for money arguments about research being needlessly repeated due to lack of publication of negative results (known as publication bias) and the moral arguments put forth by scientific opinion leaders such as *Nature* Magazine,[10] along with the positive example set by the private London-based funder, the Wellcome Trust, led to some tentative and then bolder policies emerging from the research councils. In 2011 RCUK issued a set of Common Principles on Research Data Policy.[11]

Since then, the UK-based Digital Curation Centre (DCC), a centre of expertise for the higher education community in digital preservation and data curation, has analysed and tracked both the principles and the (still-changing) individual policies, for stakeholders including academic libraries to make sense of the nuanced differences and similarities (See Figure 19.1).

Figure 19.1. Overview of Funders' Data Policies

	Policy Coverage		Policy Stipulations					Support Provided			
Research Funders	Published outputs	Data	Time limits	Data plan	Access/ sharing	Long-term curation	Monitoring	Guidance	Repository	Data centre	Costs
AHRC	●	●	●	●	●	◐	○	●	○	◐	◐
BBSRC	●	●	●	●	●	●	●	●	●	◐	●
CRUK	●	●	●	●	●	●	●	◐	●	○	○
EPSRC	●	●	●	◐	●	●	●	◐	○	○	●
ESRC	●	●	●	●	●	●	●	●	●	●	◐
MRC	●	●	●	●	●	●	○	◐	●	○	◐
NERC	●	●	●	●	●	●	●	●	●	●	◐
STFC	●	●	●	●	●	●	●	◐	●	◐	◐
Wellcome Trust	●	●	●	●	●	●	●	●	●	◐	●

Reprinted with permission from the Digital Curation Centre. Overview of funders' data policies, accessed October 24, 2015, http://www.dcc.ac.uk/resources/policy-and-legal/overview-funders-data-policies.

At the time that the University of Edinburgh was scoping its Research Data Management Policy, circa 2010, a laissez-faire attitude existed amongst UK university administrations toward the research conduct of its staff. Some researchers invited to the early scoping meetings voiced opinions that the university had no business imposing rules such as data sharing mandates on them. They were already pressured by both teaching-related regulations and paperwork, and the peculiar national obsession of the Research Excellence Framework (REF), a competition and ranking of a selected subset of publications which determines both government funding and individual career rewards in universities. It was one thing for the funders to impose rules on principal investigators regarding funded projects; it was quite another for universities to intervene in research conduct beyond the normal vetting and ethical evaluation of research projects.

For this reason and others, the policy that was eventually passed by the University of Edinburgh in May 2011 (the first such policy in UK universities) was carefully framed to shore up existing policy requirements by funders rather than to impose new mandates. It also laid out the responsibilities of the researchers themselves for the active management of research data during the life of the research project, along with the infrastructural and resourcing obligations of the institution in supporting researchers to manage their data well (such as providing sufficient storage, preservation services, etc.). The wording of the policy made clear that the policy itself was aspirational, and would take several years to fully

implement.[12] Many of the UK university research data management (RDM) policies that were developed in the next couple of years copied the tone or words of the Edinburgh policy, which was formulated by the former director of the DCC, Chris Rusbridge, although some of the later ones dared state their requirements more forcefully.

Surprisingly, it was the last research council to formulate a policy that turned out to be the real game-changer. In April 2011, the Engineering and Physical Sciences Research Council (EPSRC) decided to place the requirements for data management and sharing on institutions as a whole, rather than individual grant-holders. They issued expectations of institutions in receipt of their (sometimes quite substantial) research funds, for example that the institution would gather data management plans from every research project—whether EPSRC-funded or not. Yet they did not ask grant-seekers to include a data management plan either as part of their submission, or any time after their proposal was accepted. This was an ingenious way for the council to pass on enforcement of their expectations to institutions. They also mandated that each institution receiving their funds create a "roadmap" of progress toward implementation of the expectations by May 2015; since then they have been conducting various forms of light-touch checks and audits on compliance.

Needless to say, the prospect of losing all future funding from the largest research council in the UK eventually focused minds from the tops of institutions on down. As a rough indicator, in this period (April 2011–May 2015), 34 UK-based data-related jobs appeared in the IASSIST Jobs Repository (http://www.iassistdata.org/resources/jobs/all). Twelve of them were at the UK Data Archive, but the rest were serving individual institutions. For comparison, in the previous three years, only 13 jobs appeared (11 of them at UKDA or its sister service in Manchester).

Europe and Horizon 2020

While many countries' funders still do not require data management plans, these requirements are being piloted in the current round of European Commission funding, known as Horizon 2020. Some projects are automatically added to the data pilot but may choose to withdraw, and others may opt in. Those who do are expected to provide data management plans and deposit their data in a suitable repository for sharing. Although this is a cautious rather than bold step for the funder to take, it should provide a useful experiment for the study of outcomes. In the Commission's own words, "The Pilot will give the Commission a better understanding of what supporting infrastructure is needed and of the impact of limiting factors such as security, privacy or data protection or other reasons for projects opting out of sharing. It will also contribute insights in how best to create incentives for researchers to manage and share their research data."[13]

Academic Libraries Rethinking Research Support

Many of those jobs created at UK institutions were library-based. A few were based in a research office or an IT centre. Academic libraries increasingly have seen these roles as coordinators of research data management support across the institution (hence the commonly seen job title of RDM Coordinator or Service Coordinator). As if to hedge their bets, many of these posts started out as fixed-term, corresponding to the run-up to the EPSRC deadline, or perhaps imagined to become unnecessary once the policy and infrastructure was put in place. It is a bit too early to speculate about the lasting nature of these posts, but recent training events sponsored by the DCC seem to have quite a number of new faces among the delegates, indicating that we may be witnessing a second generation of data professionals already.

Library leaders have been tentatively embracing data support as an important part of a reinvigorated research support role, seen as necessary to redress the balance given in recent years, especially by subject and liaison librarians, toward learning and teaching (such as information literacy skills training). From a North American perspective their approach may seem partial, as in not embracing all areas of data support—such as support for secondary analysis and use of statistical and geospatial data—but rather more narrowly focused on research data management and the strengths they perceive librarians can bring to it, such as metadata, curation, and archival management.

An influential report commissioned by Research Libraries UK (RLUK) in 2012 drew attention to a skills gap among academic librarians, based on a web survey of 169 subject librarians and their managers from 22 RLUK member libraries, in which they were asked about skills that would be important in two to five years and that were important now. The skills that more than a quarter of respondents said would be important in two to five years were:

- Ability to advise on preserving research outputs (49% essential in 2–5 years; 10% now)
- Knowledge to advise on data management and curation, including ingest, discovery, access, dissemination, preservation, and portability (48% essential in 2–5 years; 16% now)
- Knowledge to support researchers in complying with the various mandates of funders, including open access requirements (40% essential in 2–5 years; 16% now)
- Knowledge to advise on potential data manipulation tools used in the discipline/ subject (34% essential in 2–5 years; 7% now)
- Knowledge to advise on data mining (33% essential in 2–5 years; 3% now)
- Knowledge to advocate, and advise on, the use of metadata (29% essential in 2–5 years; 10% now)[14]

While there is some consensus about the direction academic libraries need to go in the UK, it is less clear how they will get there. Library and information schools are attempting to fill those gaps at the Masters level, but it is left to organisations like the Digital Curation Centre (DCC) and institutions themselves to train librarians currently in the workforce. The DCC hosts an annual conference at various locations in Europe and North America, operates a peer review international journal, and provides in-depth support for institutions in the UK (http://www.dcc.ac.uk/resources). Research Data MANTRA (http://datalib.edina.ac.uk/mantra), a free, open, online course hosted by EDINA and the Data Library at the University of Edinburgh provides do-it-yourself training for both researchers and librarians in RDM, and has been adopted and adapted by other institutions for their own training requirements. The Netherlands has a similar resource, in both Dutch and English, for librarians called Essentials 4 Data Support (http://datasupport.researchdata.nl/en/). There is also now a free, cross-Atlantic MOOC (Massive, Open, Online Course) available on the Coursera platform called Research Data Management and Sharing, for researchers and information professionals, delivered by the University of North Carolina-Chapel Hill and the University of Edinburgh, over repeating 5-week enrolment periods. Some European Union-based institutional libraries have taken advantage of an EU-funded travel and training award programme called Erasmus to undertake site visits at institutions such as the Universities of Edinburgh and Glasgow and other places where they perceive RDM services have been rolled out and are somewhat mature.

For university data services to reach maturity in the UK, senior managers need to view staff investment as a response to the changing needs of their academics, rather than a simple reaction to funding council requirements. Data science is the next big trend looming, and it remains to be seen how librarians intend to engage with these new research requirements. Perhaps there is hope in the fact that the Information School at the University of Sheffield now offers a postgraduate data science degree; however, the majority of data science courses in the UK are more computing science based than librarian-focused, so it is unclear what synergies, if any, will develop between the areas of librarianship and data science. It may be observed that academic libraries that have good relations or are integrated with IT services are able to fill these service gaps more quickly than those who are more isolated from university IT and other related academic services. In this sense, it also "takes a village"† to produce robust data services in the UK.

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† For more about this concept, see the chapter in this volume by Hofelich Mohr, Johnston and Lindsay, "The Data Management Village: Collaboration Among Research Support Providers."

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