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Occupational sub-cultures, jurisdictional struggle and Third Space: theorising professional service responses to Research Data Management

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Abstract

Effective Research Data Management (RDM) is becoming an increasing concern in UK universities as a result of mandates from research funders. The study explored the usefulness of theories of occupational sub-culture, jurisdictional struggle and Third Space to understand how librarians, IT staff and research administrators view developing services to support RDM. Data were collected through 20 semi-structured interviews with staff in the Library, IT Services and Research Office of a research intensive university in Northern England.

The notion of occupational sub-culture directs attention to the different ways professional services view RDM. Broadly speaking, IT Services focussed on short term data storage; Research Office on compliance and research quality; librarians on preservation and advocacy. In terms of Abbott's theories, the Library was the only department claiming a new jurisdiction in RDM. This could be seen as an extension of its existing jurisdiction in Open Access and Information Literacy. The other departments claimed to be short of resources to take on such a complex project. Some interviewees feared RDM might be risky and demand lots of resources. Third Space theory is a powerful way to think about roles that might emerge in a new intra-professional space as RDM services become a reality.

Keywords: research data management; support of research; academic libraries; IT services; research administration; professions; occupational sub-culture; jurisdiction; Third Space

Research paper

1. Introduction

As a significant output of research, data are costly to produce yet valuable if they can be reused (Borgman, 2012). In a digital world they are being created in increasing quantity. Research data types are very diverse: from sensory data collected in the field, secondary data created dynamically in simulations, to interview recordings or image databases. Even within a single discipline the types and standards of data are diverse. Data can also be complex because of how they are generated in research collaborations and through the use of collaborative research tools. Yet they are fragile: if not enough metadata are recorded about how the data were created and what the different fields in the dataset mean, they cannot be re-used. Also, many people believe open data is key to research quality and scientific progress (Royal Society, 2012). Yet if they do not have enough discovery metadata associated with them, data cannot be re-found for reuse.

Increasing recognition of these issues has led funders in the UK to mandate better research data management (RDM) (RCUK, 2011; Pryor, 2012). RDM “concerns the organization of data, from its entry to the research cycle through to the dissemination and archiving of valuable results” (Whyte and Tedds, 2011). Research funding applications now require data management plans. A critical event in raising the priority of the RDM agenda in the UK was the Engineering and Physical Sciences Research Council (EPSRC) asking all UK Higher Education Institutions (HEIs) to formulate a roadmap by May 2012 that outlined how they would fully comply with the new RDM requirements by May 2015.

Although there are a number of national and international data repositories (RIN 2011) there are many subjects which do not have a dedicated data archive. The funders place the responsibility for RDM on researchers and their institutions (Jones et al., 2013; Pryor et al. 2014). Indeed, evidence from recent surveys (e.g. Cox and Pinfield, 2013; Corral et al., 2013) suggests that in the UK, academic libraries are taking on or planning a range of roles in RDM, as part of a wider movement to offer more support to research in general (Auckland, 2012). Roles have been identified in the areas of: policy; advice and signposting; training; auditing of research assets and creation of institutional data repositories (Monastersky, 2013; Corral, 2012; Cox et al., 2012; Lyon, 2012; Alvaro et al., 2011; Lewis, 2010; Gabridge, 2009). This work

could be spread across a number of library teams, e.g. the liaison team, metadata specialists, special collections, and systems.

Yet it is also clear that a number of other professional services will be involved in supporting RDM, particularly research administrators and computing services, as well as involving researchers themselves (Jones et al., 2013; Hodson and Jones, 2013). No one single service has the skills or capacity to take on the whole support role. Little has been written about the differing responses among professional services to the new RDM agenda and how such professional services will work together. Understanding the dynamics behind how they work together is critical to interpreting what are likely to be successful organisational arrangements. This is relevant to managers and individual professional support staff themselves. RDM can be a case study to increase our understanding of the information profession and its relation to adjacent professions. This paper reports a study that begins to address the gap in the literature by evaluating a number of potential theoretical frameworks for interpreting professional relationships around RDM, applied to a body of interview material from one institution in the early days of RDM service development.

The paper is laid out as follows. It begins by discussing three potential theoretical resources: occupational sub-cultures, Abbott's theory of the professions, and the concept of Third Space. The first two are theories widely applied to explore the nature and relations between professions. The third is a relatively new approach that has intriguing implications for how work changes where clear professional boundaries dissolve. It considers what we know about the professional communities of librarians, research administrators and computing services. After introducing the methodology of the study, the findings from thematic analysis of the interviews are laid out and then discussed in relation to the theoretical literature.

2. Theoretical resources

This section considers the relation between three potential theoretical frameworks for looking at professional services' responses to RDM. The first is through conceiving of them as driven by differences in occupational sub-cultures within organizations. The occupational cultures of librarians, computing services staff and research administrators will shape both their view of RDM and how they might collaborate or compete to support it. Such cultures are usually considered to consist of an invisible set of shared values and an observable set of "practices"

(Hofstede, 1991) or “forms” (Trice, 1993) that express these shared values (Cain, 2003).

Authors differentiate between professional sub-cultures, which refer to a profession within an organization, and professional cultures, which transcend the boundaries of the organization (Guzman *et al.*, 2008; Hofstede, 1998; Trice, 1993). Within an organization there is a tension between the professional sub-cultures and the values and purposes of the organizations itself. There is also scope for conflicts between the various occupational sub-cultures due to their different beliefs and value systems. It may be that an occupation has strongly held belief systems that make it rigid and inflexible, or that they have cultural forms such as occupation-based stories in which others outside of the occupation are portrayed as dysfunctional stereotypes (Trice, 1993, p. 25). Such tensions can be resolved in a number of ways, including assimilation and accommodation.

The concept of conflict between professional groups is developed further in Abbott’s (1988) work, which focuses on struggles between professional groups, not limited to a single organization. This is our second potential framework for looking at responses to RDM. Abbott himself has written specifically about the information professions (1988; 1998) and others have used his theories, especially to examine librarianship’s relationship to IT (Cox and Corral, 2013; O’Connor, 2009a; Ray, 2001; Danner, 1998; Van House and Sutton, 1996). According to Abbott, professions are in constant competition with one another because the environment in which they operate is continuously changing, e.g. due to social-cultural and technological change. Abbott’s system of professions is “a world of pushing and shoving, of contests won and lost” (Abbott, 1998, p. 433). In essence, the theory states that professions seek to claim exclusivity over certain areas of work, for what Abbott labels “jurisdiction”. Claims for jurisdiction can be made in three different ways:

1. through acquisition of power to license and regulate those who may perform in the area of work by means of a professional organization,
2. through creating a public image that associates the profession with that area of work,
3. and through direct competition with other occupations and professions in the workplace.

Professions cannot occupy a jurisdiction “without either finding it vacant or fighting for it” (1998, p. 86): if there is a vacant jurisdiction – such as RDM – this will be a trigger for events in which adjacent professions dispute each other’s jurisdiction. Such disputes can be resolved in a

number of ways. For example, they can lead to either full jurisdiction for one profession, or to the subordination of a number of professions to another one. The dispute could also result in a stand-off that leads to a more or less equal division of the jurisdiction into interdependent parts. Abbott calls this a division of labour or a divided jurisdiction.

A third way of looking at areas of intersection between services and professions is through the concept of Third Space. The post-colonial theorist, Homi Bhabha, used the term Third Space to refer to the boundary zone in which two cultures meet, hybrid identities take shape, and new discourses are created. It is a site of competition between powers: "the negotiation of incommensurable differences creates a tension peculiar to borderline existences" (Bhabha, 1994, p. 218). Whitchurch (2008) has applied this concept to "the emergent territory between academic and professional domains" (p. 377). The blurring of boundaries of what academic and professional staff traditionally do, has opened up a new space where staff combine activities from both. What she calls "blended" professionals are recruited to appointments that cover both professional and academic domains, whilst "unbounded" professionals are actively trying to extend their roles beyond their given job descriptions, thus moving from their professional role into "the borders of academic space".

Third Spaces can be defined as spaces that "involve interactions between people who would not normally have worked together, where those interactions are focused on a shared (often novel) object (concept, problem, idea)" (McAlpine and Hopwood, 2009, p. 159). In the context of professional cultures in HEI, Third Space theory so far has only been applied to the continuum between non-academics and academics, not between the various professional services (with the exception of Ferguson and Metz, 2003, who applied it to the convergence of library and IT services). However, it could be fruitfully applied to the new area of Research Data Management, which is commonly understood as an area that cannot be undertaken by only one support service but is "shared" between them and with researchers themselves. RDM could be viewed as what Whitchurch (2012, p. 33-37) calls an *integrated* Third Space where projects are "explicitly recognized by the institution and embedded within organizational structures", as opposed to *semi-autonomous* (recognized but self-funded) and *independent* Third Spaces (not-recognized and self-funded).

Such Third Spaces can be seen both as an opportunity and a site of struggle. On the one hand, in-between spaces can "transcend difference" (for example differences in professional

allegiance) and they can “support a variety of agendas” (Whitchurch, 2012, p. 22 and 23). In her writing Whitchurch tends to view Third Space as positive for those working in them. On the other hand, however, commentators describe Third Space as an arena where different cultures clash. Third Space can be “risky, threatening or dysfunctional” (op.cit., p. 84). Status is uncertain, career paths are complex, and relationships may be challenging. Shelley (2010) defines this “shifting arena” as “a shared space of tension”.

Thus one theoretical resource for considering the response to RDM is the notion of differences in professional sub-cultures. Each of the professional groups involved in RDM has a different sub-culture. These lead to differing, possibly even incommensurable views of organizational problems and break downs in communication. This is consistent with Abbott’s focus on difference between professional groups, but in Abbott there is a greater stress on the dynamics of direct competition between sub-cultures. Abbott’s theory places the project of professionalization centre stage and follows the story of professions battling for territory and trying to create a strong sub-culture, knowledge base, ethical code, and a degree of autonomy. For the individual, such professions are relatively stable structures within which to build an identity and career. Yet from a managerialist perspective the autonomy, career path structures and jurisdictional boundaries implied by professionalisation can be considered as costs that weigh against the benefits of professional expertise. This perspective is perhaps under-theorised in Abbott, because his focus is on professions, but for professional-based services embedded in larger organizations this is an important context, as Trice’s (1993) work in the sub-cultures literature makes clear. From such a managerialist perspective, Third Spaces can be useful to institutions, because managers have more power when professionalisation is eroded and superseded by small-scale, probably temporary pockets of expertise supported by limited cross-organizational sharing. For the individual, Third Spaces could be exciting but also challenging, because identities are more fluid and expertise is more temporary. Whitchurch tends to celebrate Third Spaces and downplay the potential managerialist agenda and the personal risk associated with their uncertainty and conflict. Yet as “a shared space of tension”, the theory does seem useful to help us understand the experience of operating within changing patterns in how expertise is managed, especially with the long term decline of the professions relative to organizations.

3. Professional services and their relations

Libraries and librarians

Having considered available theoretical resources, the following sections look more closely at the empirical data about the three professional groups examined in the study. Librarians belong to an established profession with a long tradition. The cultural values of the profession (though not uncontested) are well known, particularly to readers of this journal. Particularly relevant in the context of RDM is the pragmatism of the profession, as well as the tension between a focus on service and empowering users through teaching literacy and stress on identifying and promoting things that users are thought to need even if they do not realise it. Beliefs around open access and a more hazy commitment to stewardship and preservation also come into play. Their particular orientation to technology as a means not an ends (Cain 2003) is also potentially significant. There are dedicated university curricula in Library and Information Studies (LIS), and there is a well-established professional body that accredits these curricula in the UK, CILIP. Although such bodies also exist for research administration and IT services, they are far less well established and less authoritative.

The LIS profession has sometimes been studied from the viewpoint of its competition with neighbouring professions and occupations, most notably Information Technologists. Partly using Abbott as their theoretical framework, Van House and Sutton (1996) argue that librarianship is under threat from other professions and academic disciplines: "LIS risks being outnumbered, outmanoeuvred, and rendered marginal" (p. 145). Most notably, this threat comes from Information Technology, digital information (both digitized and born-digital), and the Internet. It is argued that this has led to "a reinvention of the access role" - the core jurisdiction of librarianship for Abbott - potentially in competition with IT professionals because the Library has taken on the management of electronic content (Cox and Corral, 2013). Another important development is the advent of Information Literacy (IL) as a preoccupation and academic librarians' increasing educational and teaching role (O'Connor, 2009a, 2009b; Wilson and Halpin, 2006). O'Connor (2009a) argues that IL helped the library profession in several ways: it replaced access with new educational tasks, it cut the librarian loose from the physical library to create a jurisdiction around a concept rather than an object, and it expanded the client base by defining IL as a lifelong skill.

It may be that a similar response to the still increasing threat to the library's traditional access role is happening within the RDM agenda (Cox and Pinfield, 2013). RDM could be seen as an extension of the growing part that academic libraries are playing in institutional repository management – another attempt “to expand the profession's access jurisdiction into new areas” (Cox and Corrall, 2013, p. 12).

IT services and IT professionals in HE

The IT profession is a large occupation spread over many sectors of work and little of the literature on it is specific to the HE context. Although an economically and culturally significant occupation, it is not organized in professional terms like librarianship. Professional bodies have sought to credentialise skills in IT, but the speed of change in IT has prevented them achieving occupational closure (Danner, 1998). One strand of studies of IT has applied Trice's (1993) theoretical framework to IT professionals (Guzman and Stanton, 2009; Guzman *et al.*, 2008; Ramachandran and Rao, 2006). These studies have found that IT professionals have a distinctive occupational sub-culture. IT professionals value technical knowledge highly, have a need to constantly re-educate themselves because of the dynamic changes in their field, define the boundaries of their community in terms of their occupational role rather than their training or affiliation to an organization, and they cherish a feeling of superiority (which Trice calls ethnocentrism). There is a lack of formal work rules and there are no clear formal requirements for membership of the group. Indeed, Guzman *et al.* (2008, p. 46) argue that “the boundaries of IT occupational sub-culture are porous, and that some employees may feasibly traverse IT professional versus non-IT professional roles”.

A number of studies have compared librarians with IT professionals. The literature on convergence of library and IT services usually acknowledges the cultural differences between the two (Joint, 2011; Hwang, 2008; Stemmer, 2007). Creth (1993) argues that these differences stem from their education: librarians share “a process of acculturation” through their dedicated and accredited university courses in librarianship, but IT professionals do not have a shared socialization process and therefore no “shared professional history and values”. It might be more plausible to argue that rather than having no shared values, IT professionals maintain these in less formal ways than via professional bodies.

Creth (1993) reports a list of conflicting and shared values between the two professions. The list contrasts the technical orientation of IT professionals with the service orientation of librarians, and IT professionals' entrepreneurial behaviour with librarians' need for consensus. However, according to the list they do have a professional orientation in common, and a concern for the well-being of their institution. Favini (1997), in contrast, argues that the two have little in common, apart from the fact that they both use technology to support the university's academic mission.

Another strand in the literature points to the variety of IT-related professional roles. Stereotypically systems administrators would be seen as different from programmers or web developers. Even different platforms such as Unix and Linux have their own sub-cultures. Buche (2008) argues that IT professionals could have two main role identities: a technical versus a more general business role. Loogma *et al.* (2004) argued that, although interest in IT is at the core of IT professionals' work identity, there are several circles around this core where the readiness to cross career boundaries into other professional communities increases. Ramachandran and Rao (2006) compared IT professional sub-cultures with managerial sub-cultures. They found that "managers believed that their task was to manage people and communicate the organizational vision" (p. 202); IT professionals, on the other hand, derived their identity from the role of IT in their organization..

Research offices and research administrators

Because there have been few contacts at a working level between information professionals and research administration, this field is likely to be less familiar to readers of this journal. Research administration plays "an important part in formulating, developing, supporting, monitoring, evaluating and promoting" university research (Hockey and Allen-Collinson, 2009, p. 142). Originally, the function of research administration belonged to the task set of academic staff. Macfarlane (2011) discusses how "all-round" academic practice has been unbundled and some specialist functions such as research administration have become the domain of what he calls the "para-academic". This trend has been stimulated by a more managerialist approach to university governance since the 1980s, and subsequently by a specialization of administrative support functions. This was caused in particular by increasing administrative and regulatory demands on universities from government and mechanisms such as the Research Assessment Exercise (RAE) and then the Research Excellence Framework (REF).

The growth of specialist research administration has also arisen from competition for externally funded research and pressure to improve the governance of research. Since administering research tasks has become increasingly a strategic corporate concern, dedicated support services have come into existence, operating on the “interface, between academic research and corporate management” (Green and Langley, 2009, p. 4).

Unlike librarianship, the occupation of research administrators does not appear to have many traits of a profession. Green and Langley (2009) report that there is a lack of accredited professional training, appropriate and nationally recognized qualifications, and clear career progression in the field. Although there is a specialist professional body in the UK, called Association for Research Managers and Administrators (ARMA), it only has around 1,900 members (ARMA, 2013). Indeed, Green and Langley’s (2009, p. 17) survey showed “an embryonic profession struggling to create an identity”. They found that many research administrators did not feel well understood by either academics or their colleagues from the other support services. Most felt they belonged “to a profession within their institution” (p. 14) but that they were not considered to be a profession to the same extent as Finance and Human Resources.

Green and Langley (2009) pay little attention to relationships with other support services. Generally, the literature focuses on the relationship with academic staff. The position of being administrative staff but very closely involved with academics’ research is seen as the cause of tensions between academics and the research administrators which generates issues of identity and credibility. A common thread through the literature is reflected in McInnes’ (1998, p. 168) observation that administrative staff are often frustrated by their “default identity of ‘non-academic’”, academic staff thus defining administrators as the “other”. Academics are usually viewed as the “core workforce”, with a wide range of “support workers” at the periphery (Collinson, 2006, p. 276; also: Hockey and Collinson, 2009; Kimber, 2003). Nevertheless, Collinson (2007, 2006) found that this “putative” boundary was in fact a blurred and permeable one: the research administrators she interviewed recognized there was a tacit boundary, but they emphasized the shared culture and overlapping duties and responsibilities. At the same time she observed that research administrators were venturing out into traditional academic tasks such as teaching, research, and advising research students. Effectively, then, this is a Third Space. Some research administrators described themselves as “aspiring

academics” (Collinson, 2006, p. 279; Shelley, 2010, p. 48). Indeed, many research administrators have undergone academic socialization, e.g. through a Master’s or doctoral study. Collinson (2006) found that many feel that their work would be more difficult if they did not have sufficient “academic capital” both for functional reasons (being able to understand the research they are supporting) and more importantly for credibility reasons. She suggests that this might be their distinctive feature within the support services (2006, p. 278): “research administrators constitute a relatively distinctive sub-group within university and college administration in terms of their allegiance to what might be termed academic or ‘scholarly’ values and culture.” This is caused either by their close involvement with research, or by their own academic backgrounds. Shelley (2010) points out that a difference with academics is that they value research capital primarily within the framework of their institution’s research, whereas researchers themselves value it as individuals rather than associating it with their institutions.

Research questions

The emergence of RDM as an arena of possible new joint activity is an opportunity to examine the nature of relationships between professional groups within universities and explore which theoretical frameworks give richest insights into such relations. As we have seen, the literature offers some conceptual frameworks such as occupational sub-culture, the system of professions, and Third Space that could be useful lenses through which to read experience. It also helps to establish the character of each professional group’s culture, sometimes using these theoretical resources, and it may help us to understand how their relationships might shape the response to new agendas, such as RDM. Building on such literature, the research questions addressed in this research were:

1. How do different professional groups see RDM ?
2. How do they think RDM support roles may be distributed between them ?
3. Do the concepts of occupational sub-culture, jurisdiction and Third Space enrich our understanding of how RDM is received?

4. Methodology

The research adopted an interpretivist methodology; the purpose was to understand how social actors themselves saw RDM and then to analyse how these responses could be

understood through the theoretical resources available. Interview data would be the typical data type used in studies influenced by all three theoretical approaches introduced above. Data were collected through semi-structured interviews with professional services staff in one HEI in Northern England. This institution is a research intensive university with separate departments for library and IT services (not a converged service) and with a centralized research office, henceforth referred to as Library, IT Services, and Research Office. Cox and Pinfield (2013) found that most HEIs are still in the early stages with regard to planning and implementing an RDM support service and that libraries are often taking on a leadership role. In that light, the HEI in this study could be seen as having many typical features. At the time the interviews were undertaken, in the period between February and April 2013, an RDM service had not yet been set up. The roadmap for EPSRC had been delivered; the need to deliver an infrastructure was still several years off. Meanwhile it had become clear that the Library would play a leading role.

A series of 20 semi-structured, one-to-one interviews lasting between 45 and 90 minutes each were conducted. University of Sheffield ethics procedures were followed to gain voluntary informed consent from participants. In this report responses are anonymised. The purpose of the interviews was to gather insight into:

- the professional identity of the interviewees, particularly their relationships with academics and other support services,
- their views on RDM, including drivers and barriers,
- and their views on the relationships with other professional services with regard to setting up and running an RDM infrastructure.

The approach to sampling interviewees was non-probabilistic but purposive seeking to represent a good spread of job roles. It may be that views on RDM not only differ between the professions and specific roles within these professions, but also depend on power and authority in the institution. For each of the services, therefore, both managers and non-managers were interviewed; the sample was also deliberately chosen to display a spread over different relevant units within the departments. It comprised both income capture officers, helping researchers gain funding, and those involved in research governance (good research practice) in the Research Office (four interviews), managers, subject liaison librarians, metadata specialists and systems librarians in the Library (eleven interviews), and those involved in infrastructure (hardware) and applications (software), information security and records

management in IT Services (five interviews). The emphasis lies on the Library because of its leading role in this university's RDM activities. The interviews were recorded, transcribed and then analysed by thematic analysis (Braun and Clarke, 2008). Through careful reading and re-reading of the transcripts, a framework of themes or "matrix [...] for ordering and synthesising data" was developed in an Excel spreadsheet and this was used as a structure within which to make a close comparison of data under each theme (Bryman, 2012; Ritchie *et al.*, 2003, p. 219). After conducting a reading of the data grounded in the material itself, the findings were reconsidered applying the three theoretical perspectives explained above.

5. Findings: Professional views of RDM

When participants were asked to define RDM and identify drivers and barriers, particular topics seemed to be associated with particular professional stakeholders. Thus the storage of active data was largely a concern of IT professionals. They viewed RDM as predominantly (but not solely) a storage issue from a systems engineering perspective. The emphasis lay on short-term storage of "active" data. One of the IT professional participants explained that in his experience, academics are always concerned about storage for their operational data rather than about issues involving metadata and data sharing. He argued that long-term storage and data sharing are what most people may think of as RDM, but that it is only part of the story and possibly not even the most pressing one:

Longer term, there's the whole archival retrieval area and kind of support things, like open data access, which is often what people think data management is: it's about the archival bit and it's about linking data to research outputs, which is one aspect of it. But for many people the things they struggle with is actually: How do I deal with the stuff now? What is good practice?

All participants from IT Services answered that their prime drivers were short- and to a lesser extent long-term storage and their benefits for the institution, and their most important barrier was invariably the cost of that storage.

I think ultimately we're driven by the demands of what our customers want and the things that they want is lots of cheap and easy to access data storage. I think it's data storage that's the principal driver. And information security because obviously we need

to be very careful we don't have information breaches. So I'm afraid it's boringly traditional IT stuff: it's the storing of information, and making it available to the appropriate people. [...] I tend to view it with my IT hat on, as I'm in the IT department, rather than the broader objectives. I know what we're trying to achieve in terms of data sharing and improving research quality and so on, but they're sort of side effects of actually getting the technical bits right from my point of view anyway.

Some of the specialists interviewed, such as the expert in high performance computing, the information security expert, and the interviewee involved in records management (who was located under the IT services umbrella) naturally saw RDM through the lens of their specialism. RDM was very much felt to be in the realm of the domain of records management expertise. Yet their limited resources made it hard to forward a claim to a leading role.

Those working in the Research Office defined RDM mostly as the long term storage of non-active data, and the sharing of these data. One of the participants argued this was the whole point of RDM:

As an institution we'll create a lot data and information from academic research, and it's how we collate, store, and communicate that to other people either internally or externally. So it's all very well spending a lot of time doing a piece of research and creating a lot of useful information if nobody else ever knows about it. The only way new things come about is by collaboration with other people, and other people looking at what you've done and trying to take that a step further.

Yet participants from the Research Office also emphasised the limitations to open data, such as the ethical and legal requirements of the Data Protection Act, and contractual obligations. Such concerns were only mentioned in passing, and then by only a very limited number of participants from the other service departments.

The most important drivers for interviewees from the Research Office were attractiveness of the University's research for research funders (which includes compliance to their requirements), and the quality of the research. One of those with a role in helping researchers gain funding explained the first of these drivers as follows:

I think the only drivers for me at the moment are: Is it important to the people who are funding the research?

The other participants focused on research quality as the main driver for them to engage in RDM:

Because it's about enhancing the rigour of our research, and therefore the reputation of our research.

Librarians were more varied in their responses than the other stakeholder groups. Those working in open access defined RDM as an extension of their role. Both they and the metadata specialist interviewee specifically highlighted the open data aspect of RDM, and emphasized the role of metadata in data sharing:

How are you going to make your data useable by other people who don't have your background? So that has a lot to do with descriptions of the data, the [...] metadata.

By contrast, Library managers defined RDM as a challenge. One of them saw the challenge not in storage – “I don't perceive storage of data to be difficult, or indeed expensive in this day and age” – but in advocacy:

I think part of the challenge is in the advocacy, and I don't just mean the skilling-up of library, information and computing people to deal with the situation, but advocacy as far as the academics are concerned.

Another Library manager thought of RDM as the challenge of bringing all stakeholders together and to define their roles:

I think it's about working with the other stakeholders to define the roles and relation to Research Data Management, because it's the first thing that we've been an active stakeholder in, that we can't do on our own.

She found it frustrating that all involved knew what needs doing, but that it still remained unclear who was going to do what: “We're not used to working together.”

As regards drivers, some librarians had a pragmatic attitude and said that they would do what needed to be done or what they were being told to do. Others referred to the Library's

traditional role of providing access to information, to the open access agenda, and to the Library's educational role:

If you're going to have a more open approach to research data, you need to organize it. It needs to be described properly. [...] It's about [...] having it organized enough so that people can find it, use it, evaluate it, reuse it, etc. And that's absolutely central to a librarian's role. [...] But also the training, the fact that we're good at signposting, providing guidance/training in handling information. That's what we do.

The liaison librarians focused more on what mattered directly to their roles. They highlighted queries from academics as their most important driver, but at present they were getting hardly any.

In summary, IT professionals saw RDM as about data storage, especially active data storage and information security. Research administrators tended to see it as about data sharing, driven by research quality and compliance to funders' requirements. Librarians saw it predominantly as about data storage and preservation, but also advocacy and training.

6. Distribution of RDM roles between services

In this context, how did interviewees define their roles in RDM and did it involve overlaps or even competition with other professional services?

When IT staff were asked to define their role in RDM, they highlighted first of all storage from both an infrastructure (hardware) and an application (software) point of view, and secondly guidance, training and support as the areas they were likely to get involved in. One of the managers described their involvement as "providing the bedrock either directly or indirectly". He saw the management of active data as "likely to be a discussion between [IT Services] and the researchers themselves, to really tease out what their needs are." However, the management of non-active data was seen as a collaborative effort with the Library, where the Library would take control of the "management of long term repositories". For him, a research data repository would be "just another system". Advice, guidance and training was another service that IT professionals felt responsible for, although they described it as a shared responsibility, especially with the Library.

The two participants from the Research Office's income capture team saw their involvement in RDM as limited. They did see signposting and advice on Data Management Plans as belonging to their remit, although perhaps not something they yet had expertise in. However, they thought RDM would not impact on their role in any major way because they work "pre-award". They felt the research governance team would be more involved in RDM, because they operate "post-award". But the participant from that team saw her involvement in a similar way to the income capture officers: providing guidance, support, and awareness-raising.

The longer term preservation of data was identified as an area where at present only the Library had an interest. Providing guidance, training and support was identified as a role for the liaison librarians. As one of them said:

There is no two ways about it: We're mainly sales people, aren't we? We mainly turn up and go: "Hey, what do you need? Do you need to buy some books? Right, I can buy you some books." And go away and do it.

When participants were asked to identify any areas of overlap or even conflict and competition between the professional services in RDM, not all were prepared to talk in terms of conflict and competition:

I wouldn't say competition in its most blatant sense.

Others, however, did see a competitive element:

There is a bit of jostling for position over this.

One of the IT managers referred to varying priorities between the departments as a possible source of friction, especially where there are interdependencies:

I think there's scope for confusion because though those three organizations are complementary, they're not part of one single unified unit. So I think there are some potential issues around coordination, confusion and chaos and those sorts of things. We'll have the usual things that maybe [the Research Office] will want to do one thing that relies on us doing something that maybe is lower down on the list of priorities, and you probably get the usual clashes of prioritization.

It was apparent that IT professionals thought they were in a special position within the organization. “A very large proportion of what [the IT department] does is actually around all the business systems to support professional services,” for this reason the department had a central position:

It's a funnel: There's an awful lot of stuff swirl[ing] around. Ultimately when you want something doing, it has to be down some tin [=hardware] and some software and it all comes down to this funnel.

There were three main areas of overlap and contention that participants identified: systems specifications; training, advice, and guidance; and leadership. One of the Library managers mentioned storage as an area of overlapping roles. Both in the IT department and the Library there are “systems people” with expertise in “the technical infrastructure”. Most participants thought there might be an overlap in the provision of training, advice and guidance. It was generally assumed that all three departments would be involved, but that there was a danger that the information they provided would be inconsistent:

I mean we've got to be very careful that we don't have contradictory messages out there. We just need to make sure it's the same message to everybody wherever it's coming from.

Participants referred to a natural division of training roles between the departments, although they identified areas of overlap such as about practical data management, ethical considerations, and data security.

A Library manager suggested there might also be competition over the branding of the RDM support service:

It will be over silly little things like where to host the web page, because that seems to matter: Whose brand is it going to be? It's around the branding, I think, where the most competition will arise, because: which URL? [...] It will be at that level.

Less an area of overlap and more an area of direct competition was the question of RDM leadership. One of the IT managers identified RDM as “quite a major area and it is quite high profile” which could be both an opportunity and yet also a “poisoned chalice”, ie a glittering

prize with a deadly flaw. The Library, by contrast, seemed willing to take the lead in RDM. One of the Library managers described RDM as an integral part of the profession in the future:

Helping to curate research data management is going to be vital to the profession. I don't have any doubt that that will be the case.

She argued that RDM is vital to the profession because providing access to academic information is the Library's main role, whether this information is bought in from publishers, or produced by the university's own academics:

We look after academic stuff. I don't want to trivialize it, but research data is academic stuff in one form or another. I know it could be a printed notebook or it could be a really complex experimental output, it could be raw data, it could be publications, all sorts of stuff. We're in the business of looking after whatever this institution puts out into the world, and not just in the business of buying stuff in from elsewhere.

7. Discussion

Having examined the data to explore the first two research questions, the discussion turns to consider how well the frameworks discussed in section 2 perform in making sense of the professional dynamics around RDM. Some of the patterns in responses are first summarised. Some participants were reluctant to talk about there being conflict over RDM. For them, what the three professional services had in common was a shared commitment to organizational purposes and especially to service delivery. This was most clearly articulated by one of the IT professionals, who thought there could be no significant difference between the professional cultures because all were committed "to the provision of a service which they want to be high quality, and they want to make sure that the customers that use that service are satisfied." Such discourses overlay any sense of a clash of professional sub-cultures or jurisdictional dispute. Practitioners' explanations of friction plausibly attributed it as much to practical issues of communication as cultural differences.

Yet it was clear that the three groups viewed RDM in very different ways. Sub-cultural differences in the nature of the services provided and the perceived interrelationships between the departments were reflected in the different views of RDM that the participants expressed, the drivers and barriers they perceived, and how they thought the tasks should be divided. IT

people saw RDM as related to an infrastructure for active data storage. Storage to them is a systems implementation. Participants from the Library and the Research Office were not concerned with the short-term storage of active data, but with the long-term storage of non-active data and with data sharing. Research Office staff saw the attractiveness of the institution's research to research funders and the associated issue of research quality as the main driver to engage in RDM. Preservation and open access were more central for librarians. Their confidence in their role was linked to their perception of librarians' strengths as a profession in terms of networking with academic staff and characterisations of IT as less responsive as a service. Importantly, they also considered managing the outputs of scholarly effort to be an integral part of the profession – something that none of the other interviewees commented on.

These observations highlight some of characteristics of the three professional sub-cultures and their agendas: confirming the value of seeing RDM through the lens of occupational sub-culture. The relationships between the professional services and the way they perceive a plausible division of RDM roles can be used to gauge the extent to which RDM may lead to Abbotonian jurisdictional conflict. Through the interviews a fairly clear picture emerged of a division of roles between the stakeholders, and some areas of overlap.

RDM infrastructure component	Lead department
RDM policy and strategy	Library
Data management planning	Research Office
Managing active data	IT Services
Data selection and handover	?
Data repositories	IT Services, Library, Research Office
Data catalogues	Library, IT Services, Research Office
Guidance, training and support	Library, Research Office, IT Services

Table 1 Division of likely roles for the three main professional services in RDM, using the DCC's components of an RDM infrastructure as headings (Jones et al., 2013).

Interestingly, none of the interviewees identified appraisal – selection of the data to be preserved for the long term – as belonging to their remit, although many were aware of the problematic nature of appraisal, especially in IT Services. One of the IT managers saw it as a

“poisoned chalice”, because academics are unlikely to welcome rigorous selection of their data. It became clear that training, advice and guidance were likely to be a joint venture, but that there was a danger of inconsistency. As far as data repositories and catalogues are concerned, some division of tasks seemed to emerge: IT Services providing the technical infrastructure, the Library managing the repository, and the Research Office capturing some of the information needed. Arguably, managing a repository could involve appraisal (although, as mentioned before, none of the librarians discussed the topic) and it could also involve data preservation. The latter emerged as an activity that only the Library was interested in, but according to one of the Library managers preservation would not necessarily have to be a task of the Library.

Finally, librarians identified RDM as a likely integral part of librarianship, and they highlighted the alignment of RDM tasks with current Library expertise. This prompted them to claim a leadership role. Nevertheless, they argued for a reevaluation of cataloguing and metadata skills, which had been relegated to lower grade jobs or had been outsourced and which would be particularly useful for the Library’s engagement with RDM. They also perceived RDM to be an extension of the Library’s role in open access to publications, which combines championing of the open access ideology with skills and interest in repository management, including related issues of digital preservation and metadata. This would clearly constitute an extension of existing library access roles to include digital data. One of the Library managers described this as a question of provenance: adding information that is produced by the institution’s academics to the Library’s traditional remit of providing access to information bought in from elsewhere.

It would appear that any conflict over professional jurisdiction in an Abbotonian sense, would most likely involve IT Services and the Library, as the two departments that are most closely related. An on-going jurisdictional conflict between these two professions is already known from the literature (e.g. Cox and Corral, 2013; O’Connor, 2009a; Ray, 2001; Danner, 1998; Van House and Sutton, 1996). In this particular case, the interviews suggested that the Library was indeed keen to extend its jurisdiction into RDM, more so than IT Services. IT professionals seemed to consider RDM from their usual perspective as deliverers of an infrastructure as a (paid for) service, and they did not appear to be enthusiastic to expand that role into the actual management of data. Indeed, the Library was already proactively taking the lead: they had designed the institution’s RDM policy, and were leading the institution’s efforts to implement

an RDM service. As one of the IT managers said: “The library seem very keen to lead on it and I think the rest of us are quite happy to sit back and let them do it.”

Using Abbott’s theory, the driver to take on RDM could be interpreted to be as the result of pressure on the longstanding access jurisdiction of librarians. From all participants, the Library emerged as more explicitly uncertain *and* concerned about its role in the institution and in RDM in particular. Ironically, librarians were also the least well informed about the nature of academic research. The proportion of staff with PhDs, for example, was significantly lower than in the Research Office and IT Services, both in the sample of this study and in the whole population. As a big professional group in most academic institutions, the library has the resources to stake a claim for jurisdiction over RDM. Smaller groups such as the records management team or even the Research Office are disadvantaged in this respect. IT were less keen to claim the area. Perhaps this was partly because the resourcing of the area was unclear. IT Services defined themselves with a slight feeling of ethnocentric (Trice, 1993) superiority as the “funnel” through which all information has to pass in general, and as the “bedrock” of any RDM service in particular. This sense of strength could be seen to rest on IT Services themselves providing a service to the other professional departments, and there are therefore relationships of interdependency with both the Library and the Research Office. Secure in this position, the need to claim jurisdiction over RDM was less. Abbott’s lens seems useful in trying to unravel how professional relationships around RDM were unfolding.

In this institution, the Library was not fighting for “full jurisdiction” over RDM; Abbott defines full jurisdiction as complete control over an area of work, subordinating the other professions involved. It would rather seem that the parties are working towards a “divided jurisdiction”: a situation where the dispute ends in a stand-off and in a division of labour between interdependent parts. This would in many respects be expected to reflect a “natural” division of labour established in other areas where work was divided between the different services. Yet the evidence showed that there was scope for conflict between the professional services, such as those resulting from varying priorities in interdependent relationships, and possibly even some form of competition over issues such as the branding of the service, but that on a higher managerial level the benefit to the organization might very well prevail over professional dispute.

This shared RDM arena could also be seen as an unclaimed “Third Space” in-between professional services and researchers, where staff from different professional cultures and departments meet (Whitchurch, 2008, 2012). As new roles closely supporting researchers, embedded in research teams or lying between several professional services emerge, the actors in this RDM space would need invent new hybrid identities, rather than be able to stay within relatively clear, familiar professional structures. New roles would be professional or researcher-support staff hybrids. These roles would be creative, with possibilities for roles that invented new kinds of service. But they might also be unstable, vulnerable to shifts in funding or wider agendas. Third Space theory is an attractive way to look at the value and tensions of operating in a “between” space. It recognises the creative possibilities and tensions around identity, both for staff employed to work principally on RDM and for professional staff embedded in research groups. Also, the tensions present in Third Spaces remind us to consider the extent to which in a wider perspective the whole RDM agenda represents an encroachment on academics’ roles, as a managerialist move to erode academic freedom. Yet this theoretical approach seems to become more relevant as new RDM practices emerge and activity develops outside of the traditional pre-defined jurisdictional demarcations. Most interviewees in this study were touched by RDM, but not primarily occupied with it, partly because actual service delivery was in its early days. Most aspects of RDM were, rightly or wrongly, seen as fitting within existing jurisdictions. As real daily practices are created, the Third Space lens may be a good way to examine the conflicts and tensions that emerge.

8. Conclusions

Adopting the lens of Abbott’s theory is a useful way of looking at RDM. Through his theory, RDM may be considered an arena where various professions meet and vie for jurisdiction over a newly emerged area of work. This is more than simply a difficulty arising from the clash of differing sub-cultures, though that perspective also offers insights, because there is a more active sense of a dynamic of competition. In this case, of all stakeholders involved, the Library was the only professional department trying to claim a new jurisdiction in RDM. The Library’s proactive steps into this area reflect an already long-standing movement within the profession to extend its jurisdiction into a more IT-based direction, into training, and tentatively also into research support, e.g. through open access for research publications. The interviews support this interpretation: they show that the Library sees its involvement mainly as a provider of

access to research data via a repository, and as a provider of training, guidance and support to the research community. RDM can therefore be seen as a new area of work for the Library in the form of an extension of areas of work it has recently moved into. Although this involvement in RDM may represent a claim to a new jurisdiction, there was no evidence from the interviews that this was likely to develop into a struggle between competing professions within the institution. The other departments in this institution were happy with the Library's lead; they claimed to be short of resources to take on such a complex project, and some feared RDM may be a "poisoned chalice". Participants noticed there is scope for conflict, but often this was only about the usual tensions between interdependent teams or about non-fundamental issues such as branding. It would therefore seem that the Library's willingness to enter a new area of work -- driven by anxieties about its role in general, combined with the relative reluctance of other stakeholders to lead on RDM -- does not result in a struggle over jurisdiction. Another barrier to such a struggle proved to be a shared concern with the organization's greater good: all groups accommodated to the needs of the organization (Trice 1993). Abbott's theory focuses on the relations between professions; however, for profession-based services embedded in organizations, the tension between the professions' interests and the good of the organization is a key context. Sub-cultural differences do mean that the new agenda around RDM is seen differently, but the wider needs of the organisation are always holding such differences in check, especially for those in managerial roles.

The data presented in this paper were from an investigation of RDM provision in a single research intensive university. This institution had a centralized research support office but not a converged IT/library service. Other institutions will have different constellations of service and different existing relationships between the professional services prior to the emergence of the RDM agenda. In some institutions the Library will not take the lead on RDM. Different pictures may therefore emerge. How the forces identified here will play out as actual services therefore remains to be seen; at that point, the theoretical resources of Third Space theory may prove to be particularly valuable, as truly hybrid new roles emerge. However, the present study does vividly capture views at a moment of change, ones that reveal underlying forces at work.

The paper contributes a theoretically informed analysis of early responses to the RDM agenda, that is plausible because it chimes with what we already know about support services as

professional communities. Although the relations between libraries and IT services have been of interest, at least to scholars and practitioners from librarianship, relatively little research has been published on their relationships, on the internal organization of computing services in academia, and little that connects to wider research on university administration (e.g. Whitchurch, 2012). These are promising lines of future research inquiry for broadening our perspectives on library work: to understand how the profession develops as it is shaped by its relations with other professions, and in relation to organizational needs and purposes. RDM itself is a fascinating locus of change, especially as part of a seeming return for libraries (and also IT services) to support of research. This could potentially lead to significant reconfigurations of professional services, e.g. in terms of skillsets required, interactions between the services, and their styles of activity.

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