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THE UNIQUE ROLE AND VALUE OF INFORMATION PROFESSIONALS IN SPECIAL LIBRARIES

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EXECUTIVE SUMMARY

BACKGROUND

This report, produced by Dr Katherine Howard and commissioned by the Australian Library and Information Association, is based on desk research carried out over the period of November 2016 to February 2017.

Dr Howard was asked to investigate competitors to the traditional and potential roles of special librarians, and to identify the unique skills that set special librarians apart from other professions and professionals that could be considered to overlap the special librarians' domain.

It followed on from the Special Libraries Summit, held on 2 September, in Adelaide, alongside the ALIA National Conference.

KEY FINDINGS

The special librarian role remains relevant in organisations that require the organisation and management of information. While return on investment studies of special libraries provide impressive results, they don't take into account the improved quality of information, which also has a value. The work carried out by special librarians cannot be replaced by digital technologies at this time.

Emerging tasks for special librarians include the preservation of born digital materials; maximising the value of data and information through purposeful re-use and by avoiding unnecessary duplication; and playing an active role in the data lifecycle. Potential roles for special librarians may be in the area of data science, which to date has largely developed under the computer science and information technology domains, with little consideration given to how data is created, stored, used, annotated, re-used and preserved.

According to the descriptions used by the Australian Bureau of Statistics for its Job Classifications, there is some overlap for special librarians with:

- ICT professionals, mainly in the area of business and systems analysts and programmers, which includes multimedia specialists and web developers; also in the areas of database and system admins, including ICT security specialists, and ICT support and test engineers.
- Management and organisation analysts.

What separates the special librarian role from that of ICT professionals is that ICT professionals are concerned with the container, librarians are concerned with the content and the context in which information exists.

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INTRODUCTION

The sheer amount of information – and indeed misinformation in what is becoming an era of "post-truth" – that is produced on a daily basis makes the presence of a librarian more vital than perhaps at any point in history.

This brief report seeks to contribute to the action plan arising from the ALIA Special Libraries Summit (August 2016) by addressing point 2: "Our Value Proposition" from the Special Libraries Summit Report (Final)(p. 6). Specifically, this report will identify:

1. Competitors in terms of (a) traditional library and information roles; and (b) emerging roles for library and information professionals
2. A unique selling point (USP) and/or competitive advantage for library and information professionals.

For consistency, the term "librarian" is used throughout to encompass "librarian", "library and information professional" and "information professional." Also, while acknowledging that "special librarians" as a group represent a number of specialised fields, no distinction is made between these fields at this point – it is deliberately generic rather than specific.

This report is structured as follows: a recap on what we already know that special librarians do now, through literature reviews, projects and commissioned research, and how this role may be extended. Secondly, the report identifies competitors in the marketplace in terms of both job classifications and information providers, with areas of overlap between them and the librarian role highlighted. This in turn identifies the USPs of the librarian in the Special Library domain.

PART I: WHAT DO SPECIAL LIBRARIANS DO NOW

Broadly speaking, librarians are concerned with the acts of collecting, organising, describing, storing, providing access to and preserving information (Dupont, 2006; Given and McTavish, 2010; Myburgh, 2011). To that can be added a "focus on people, a social justice orientation, […] ethical and philosophical underpinnings and promotion of the public good" (Oliphant, 2017, p. 4). Librarians across the various library sectors will be involved in some or all of these activities, to a greater or lesser extent. Specific to special librarians, the Special Library Association (SLA) defines their role as "information resource experts who collect, analyse, evaluate package and disseminate information to facilitate accurate decision-making in corporate, academic and government settings" (SLA, 2010, as cited in Hallam and Faraker, 2016)

What is unique about LIS, as both a discipline of study and area of practice, is that it is highly dependent on the subject matter at hand in order to give context (Lee, 2017). Other fields (medicine, biology, computer science and IT for example) are confined within their disciplinary boundaries, notwithstanding the flexibility of those boundaries. This is not the case with LIS, with the subject matter that librarians deal with ranging from the hard sciences at one end of the disciplinary spectrum, to the arts and social sciences at the other. Flanders (2012) suggests that librarians "operate at the level of "meta-knowledge" or "the organization and management of knowledge across and apart from specific subject areas" (p.302, italics in original), which has lead other authors describe librarianship as a meta-profession (Given and McTavish, 2010; Ray, 2009; Martin, 2007; Gilliland-Swetland, 2000).

This level of abstraction to the "meta" level may very well prove to be a supporting factor in the continuing and potentially increasing relevance of the special librarian. The special librarians' ability to accurately understand and interpret the context in which their libraries operate, and to contextualise the information requirements of their organisations, is a skill that is not easily replaced by digital technologies. According to Australia's Digital Pulse report (Deloitte, 2016), "the extent that [tasks] involve social intelligence, creativity, perception or manipulation, workers are better shielded from being automated" (p. 34). Until the semantic web is more developed than it currently is, there will continue to be the need to contextualise information.

While it is argued in some quarters that the proliferation of digital technologies and the ubiquitous nature of information makes the librarian redundant, it is this very proliferation that ensures the librarian to be anything but redundant. According to Oliphant (2017), the "data turn" has in fact "focused greater attention on the role of metadata in knowledge organization such as [in] digital libraries, data repositories, and data re-use" (p. 7). She goes on to say that "[o]ften metadata is more valuable than the content it is describing because metadata connects content to a broader context …" Who better than a librarian to be responsible for applying and maintaining metadata in order to facilitate access, use and re-use of data, which now includes "big data, research data, digital data, linked data, open data, web of data, and data repositories" (Oliphant, 2017, p. 2). Who else but the librarian would bother to determine whether the duck you want to carve is for Christmas dinner or made out of wood? The ability of special librarians to contextualise information (including at the level of metadata) can certainly be considered one of their USPs.

In focusing on the digital humanities, Senchyne (2016) notes that "knowledge of data structures, archival standards, digital curation and representation has started to appear in the graduate education of disciplinary specialists" (para. 3). Although this could be seen as encroaching on the librarians' domain, it also provides evidence that what it is that librarians actually do is valuable and still needed. This is further evidenced by the Return on Investment study commissioned by ALIA that conservatively estimates that for every $1 invested, special libraries returned a value of $5.43 (SGS Economics and Planning, 2014). Even more impressive was the $9 return for every $1 invested – again a conservative estimate – in Australian health libraries (SGS Economics and Planning, 2013).

However, determining the overall value of library services is problematic on many levels, a point that is well covered by Hallam and Faraker (2016, Section 4, p. 12), so will not be repeated here. For convenience, a brief summary of the main points follows:

- Defining "value" as a concept is difficult, and there is no consensus in the literature about what it is
- "Value" and "impact" are often used interchangeably, without definitions
- While ROIs can provide a dollar figure of benefits (time, money savings) against the costs of the library service, issues of improved quality of information provided is not taken into account.

This improved quality of information is another consequence of the special librarian's skill in providing the most appropriate and accurate information because of their ability to contextualise. What value can be placed on avoiding a costly legal case from copyright breaches or provision of inaccurate information? In the case of special librarians, it is not beyond imagination that the correct information at the correct time might actually save a life (in the case of health librarians). In this way, special librarians can be seen at the very least as a type of insurance policy, and, if given the right support, can contribute to achieving greater efficiencies for the organisation through the provision of timely, accurate and appropriate information.

HOW THIS ROLE CAN/WILL BE EXTENDED

Although it is difficult to say with any certainty how the role of the special librarian may develop, the increase in born digital information points to the need for increased attention to the preservation of that information (which in this context is inclusive of "data"). Accepted preservation practices include actions concerning the use and re-use of data, and for this to be successful, "skilled digital curators and effective curation lifecycle management" must be in place (Digital Curation Centre, 2017). Re-use enables people to use data in potentially different ways from the original purpose for which it was collected – thus "transforming" the data (a DCC Lifecycle Model term), and maximising its value. Given the special librarians' skill in contextualising information and metadata, as mentioned above, the contribution they would be able to make in managing information for strategic purposes – ensuring that data and information weren't unnecessarily duplicated as one example – is clear.

The other emerging role/s concerns data science. D.J. Patil and Jeff Hammerbacher, who at the time were the data and analytic leads LinkedIn and Facebook respectively, coined the term in 2008 (Davenport and Patil, 2013). The majority of literature surrounding data science and librarians focuses on academic librarians rather than on special librarians per se, as the role has often been associated with the large data sets generated by research data, however, correlations can be seen with how these roles may work in a special library context.

Problems of nomenclature abound, and in some ways "data science" is an all-encompassing term for the various data-related roles that exist. Although nearly ten years old, Swan and Brown (2008) provide a good summary of the literature, and come up with four distinct, but overlapping roles:

- data authors/creators
- data scientists/specialists
- data managers
- data librarians/archivists

According to Swan and Brown (2008), data scientists are domain experts with high level technical skills, or computing specialists with in-depth domain knowledge, neither of which fit within the profile of the special librarian provided above. Gabridge (2009) and Gold (2007) have also questioned whether librarians have the domain knowledge and technical skills that are required.

Cox and Corrall (2013) however, suggest that 'data scientist' is an "umbrella term[s] for specialists/professionals who work with and support researchers […] and whose jobs may cover a range of functions, from organizing, annotating and enhancing raw data to storing, securing and preserving datasets at the end of a project" (p. 14). This is more closely linked with the special librarian profile mentioned above. Further, Lyon (2012, as cited in Cox and Corrall, 2013) suggests that libraries (and therefore by extension, librarians) could "mediate public access to research datasets [… facilitating] citizen science" (p. 15). This supports the librarian's "focus on people, a social justice orientation, […] ethical and philosophical underpinnings and promotion of the public good" (Oliphant, 2017, p. 4) mentioned earlier.

[1] *Or 'digital curation', of which preservation is a part.*

Finally, data science, as an emerging academic discipline is being driven solely by computer science (CS) and information technology (IT), and the values, principles, and perspectives that underpin information management (IM) are not being considered (Martin, 2015). This is evidenced by a body of literature that appears to equate data science predominantly with big data and its value to public sector business in terms of productivity gains and competitive edge (Shah, Cappella, and Neuman, 2015; O'Neil (2014) as cited in Tang and Sae-Lim (2016); Manyika et al., (2011)). Although big data is unquestionably a part of data science, as a discipline, how data is created, stored, used, re-used and preserved is being overlooked.

The US National Science Foundation (NSF)(2005) includes librarians and archivists in its definition of what data scientists should be:

> [Data scientists are] the information and computer scientists, database and software engineers and programmers, disciplinary experts, ***curators*** and expert annotators, ***librarians, archivists,*** and others, who are crucial to the successful management of a digital data collection (NSF, 2005, emphasis added).

Swan and Brown (2008) support a data life cycle approach when looking at what data scientists do, and refer to the Digital Curation Centre's (DCC) Curation Lifecycle Model (DCC, 2016). This is arguably the domain of IM expertise, specifically (data) librarians, archivists and curators, a point supported by the NSF in their definition given above.

PART II: MAP THE OVERLAP WITH COMPETING ROLES AND PROVIDERS

In order to identify potential competing roles, the Australian Bureau of Statistics (ABS) Job Classifications were used. The relevant classifications appear under "Major Group 2 Professionals," which has the following seven sub-major groups:

SUB-MAJOR GROUP 21:	Arts and Media Professionals
SUB-MAJOR GROUP 22:	Business, Human Resource and Marketing Professionals
SUB-MAJOR GROUP 23:	Design, Engineering, Science and Transport Professionals
SUB-MAJOR GROUP 24:	Education Professionals
SUB-MAJOR GROUP 25:	Health Professionals
SUB-MAJOR GROUP 26:	ICT Professionals
SUB-MAJOR GROUP 27:	Legal, Social and Welfare Professionals

Under this classification, Librarians fit within the hierarchy as follows:

MAJOR GROUP 2: Professionals

> SUB-MAJOR GROUP 22: Business, Human Resources and Marketing Professionals

> MINOR GROUP 224: Information and Organisation Professionals

> UNIT GROUP: 2246: Librarians

Starting at the level of minor group 224, the work undertaken by this group is described by the ABS as:

> INFORMATION AND ORGANISATION PROFESSIONALS support organisations, government, individuals and the community by ***analysing, organising and managing information and data,*** and by providing advice on policy, business and organisational methods, and the value of property and other items (emphasis added)

Note that this description refers to "analysing, organising and managing information and data." It does not refer to managing the ***systems*** that store this data (i.e. the "engineering" or technical side of information management).

There are eight unit groups that make up the 224 minor group. They are:

2241: Actuaries, Mathematicians, and Statisticians

2242: Archivists, Curators and Records Managers

2243: Economists

2244: Intelligence and Policy Analysts

2245: Land Economists and Valuers

2246: Librarians

2247: Management and Organisation Analysts

2249: Other information and Organisation Professionals

2247: Management and Organisation Analysts and 2249: Other information and Organisation Professionals are potential competitors to ***2246: Librarians,*** and these will be mapped against each other using the Tasks identified by the ABS for each unit group. The ABS description of each unit group is following.

> ***2247: Management and Organisation Analysts***
> This unit group assists organisations to achieve greater efficiency and solve organisational problems, and study organisational structures, methods, systems and procedures. ICT Business Analysts are excluded from this unit group.
>
> ***2249: Other information and Organisation Professionals***
> This unit group covers Information and Organisation Professionals not elsewhere classified. It includes Electorate Officers, Liaison Officers, Migration Agents (Aus)/ Immigration Consultants (NZ) and Patents Examiners.
>
> ***2246: Librarians***
> Librarians develop, organise and manage library services such as collections of information, recreational resources and reader information services. Teacher-Librarians are excluded from this unit group.

On reflection, the description of ***2249: Other information and Organisation Professionals*** bears little resemblance to anything that might be considered competition to the (special) librarian, so this classification will not be included in the mapping.

TABLE 1

Task	2247	2246
2247 MANAGEMENT AND ORGANISATION ANALYSTS		
Assisting and encouraging the development of objectives, strategies and plans aimed at achieving customer satisfaction and the efficient use of organisations' resources	✔	
Discussing business and organisational shortcomings with clients	✔	
Analysing and evaluating current systems and structures	✔	✔
Discussing current systems with staff and observing systems at all levels of organisation	✔	✔
Directing clients towards more efficient organisation and developing solutions to organisational problems	✔	
Undertaking and reviewing work studies by analysing existing and proposed methods and procedures such as administrative and clerical procedures	✔	
Recording and analysing organisations' work flow charts, **records**, reports, manuals and job descriptions	✔	✔
Preparing and recommending proposals to revise methods and procedures, alter work flows, redefine job functions and resolve organisational problems	✔	
Assisting in implementing approved recommendations, issuing revised instructions and procedure manuals, and drafting other documentation	✔	
Reviewing operating procedures and advising of departures from procedures and standards	✔	
2246 LIBRARIANS		
Developing and implementing library and information policies and services		✔
Examining publications and materials, interviewing publishers' representatives, and consulting with others to select library materials		✔
Reviewing, evaluating and modifying services in response to user needs	✔	✔
Providing assistance to clients in accessing library resources		✔
Managing library systems for recording and organising library holdings, acquisitions and purchases, reader registrations and loan transactions, and supervising indexing, filing and retrieval activities		✔
Managing inter-library loan systems and information networks		✔
Undertaking information research activities on behalf of clients	✔	✔
Selecting, ordering, classifying and cataloguing library and information resources		✔
Monitoring collection development and culling programs		✔
Supervising and training other library staff		✔
May plan and direct library promotion and outreach activities		✔

✔ Task currently done by this classification

✔ Task potentially done by this classification

The "Task potentially done by this classification" has been assessed quite conservatively, as many of the Management and Organisation Analysts tasks may indeed be undertaken by Librarians, depending on their previous work experience and education.

SUB-MAJOR GROUP 26: ICT PROFESSIONALS

If we return to the seven sub-major groups shown at the beginning of Part II, (p. 8), it can be seen that the only other potential competitor may be within sub-major Group 26: ICT Professionals. The work undertaken by this group is described by the ABS as:

> ICT PROFESSIONALS perform analytical, conceptual and practical tasks which support the efficient and secure provision of information and communication technology (ICT) services to government, commercial and industrial organisations, and individuals.

Although this sub-major group is at a higher level of the hierarchy than 2246 Librarians, and the tasks are at a more generic level, it is worthwhile addressing any areas where there is potential overlap. This is shown in the following *Table 2:*

TABLE 2

Task	26	2246
26 ICT PROFESSIONALS		
Developing and documenting strategies, policies and procedures relating to the use of ICT technologies and services	✔	
Planning, analysing, **designing**, developing, implementing, testing, operating, maintaining and assisting with the use of **technologies and services that enable information**, such as voice, image and data, **to be accessed**, networked, stored, processed, transformed, manipulated and transmitted over a variety of media	✔	✔
Assessing the performance of ICT technologies and services, identifying limitations and inefficiencies, and **recommending** and implementing **solutions** providing troubleshooting and service support in diagnosing, resolving and correcting problems associated with the use of ICT technologies and service	✔	✔
2246 LIBRARIANS		
Developing and implementing library and information policies and services		✔
Examining publications and materials, interviewing publishers' representatives, and consulting with others to select library materials		✔
Reviewing, evaluating and modifying services in response to user needs		✔
Providing assistance to clients in accessing library resources		✔
Managing library systems for recording and organising library holdings, acquisitions and purchases, reader registrations and loan transactions, and supervising indexing, filing and retrieval activities	✔	✔
Managing inter-library loan systems and information networks		✔
Undertaking information research activities on behalf of clients		✔
Selecting, ordering, classifying and cataloguing library and information resources		✔
Monitoring collection development and culling programs		✔
Supervising and training other library staff		✔
May plan and direct library promotion and outreach activities		✔

✔ Task currently done by this classification

✔ Task potentially done by this classification

There are aspects of the second and third tasks in sub-major 26 that librarians may have (and should have) input into, and these are shown in bold in *Table* 2. The first is "designing […] technologies and services that enable information, […] to be accessed […]."

Although librarians don't actually develop software or other technology that might be implied by the phrase in its entirety, the user-focus of Librarians means that they should absolutely be involved in the design of systems intended for use by employees of the organisation. Additionally, librarians' concern with the access of information and the associated metadata required to provide context is another reason why librarians should be involved with this part of the task.

The aspect of the second task that librarians should be involved with are again in bold: "Assessing the performance of ICT technologies and services, […] and recommending […] solutions." Evaluation of information sources, services, and systems is a key component of the librarian's role, and they can provide a valuable user-focussed perspective.

Both of these tasks also have a very technical aspect to them that is outside of the scope of a librarian's role (with the possible exception of a "systems librarian"), but both tasks also have a "soft skills" aspect which traditionally has not been well catered for by the ICT professionals.

Conversely, the more technical aspects that may be involved with "Managing library systems …" (Librarians, Task 5) is an area where the ICT Professionals would have a legitimate claim.

Sub-major group 26 ICT Professionals includes the following minor groups and their subsequent unit groups:

MINOR GROUP 261 Business and Systems Analysts, and Programmers

UNIT GROUP 2611 ICT Business and Systems Analysts

UNIT GROUP 2612 Multimedia Specialists and Web Developers

UNIT GROUP 2613 Software and Applications Programmers

MINOR GROUP 262 Database and Systems Administrators, and ICT Security Specialists

UNIT GROUP 2621 Database and Systems Administrators, and ICT Security Specialists

MINOR GROUP 263 ICT Network and Support Professionals

UNIT GROUP 2631 Computer Network Professionals

UNIT GROUP 2632 ICT Support and Test Engineers

UNIT GROUP 2633 Telecommunications Engineering Professionals

There are many tasks performed by each of these groups which have no relevance to special librarians (e.g. "designing, developing, and integrating computer code…"). For brevity's sake, only the most appropriate tasks from each of these groupings are included in *Table 3*. Where only part of the task is relevant to librarians, that part is in bold; and it should be noted that not all librarians would perform such tasks, but is included as a possibility (e.g. "Designing and developing digital animations…"). Some tasks will also be situational dependent.

TABLE 3

Task
261: BUSINESS AND SYSTEMS ANALYSTS, AND PROGRAMMERS
Identifying and evaluating inefficiencies, deficiencies and limitations in existing systems and associated processes, procedures and methods, and recommending optimal business practices, and system functionality and behaviour
Designing and developing digital animations, imaging, presentations, games, video clips, and Internet applications using multimedia software, tools and utilities, interactive graphics and programming language
2612: MULTIMEDIA SPECIALISTS AND WEB DEVELOPERS
Analysing, designing and developing Internet sites applying a mixture of artistry and creativity with software programming and scripting languages and interfacing with operating environments
Communicating with network specialists regarding web-related issues, such as security and hosting websites, **to control and enforce Internet and web server security, space allocation, user access, business continuity, website backup and disaster recovery planning**
262 AND 2621: DATABASE AND SYSTEMS ADMINS; ICT SECURITY SPECIALISTS
Designing and maintaining database architecture, data structures, tables, dictionaries and naming conventions to ensure the accuracy and completeness of all data master files
Performing the operational establishment and preventive maintenance of backups, recovery procedures, and enforcing security and integrity controls
2632: ICT SUPPORT AND TEST ENGINEERS
Recommending corrective action plans and improvements in the resolution of non-compliance with standards detected through monitoring and auditing of processes and procedures (in the librarians domain, this could be copyright compliance, as an example)
Communicating, educating and liaising with users and management to ensure awareness and adherence to standards, procedures and quality control issues and activities (note: the 'standards, procedures and quality control issues' referred to here may encompass different professional domains)
Developing, conducting and providing technical **guidance and training in application software** and operational procedures
Performing organisational systems architecture reviews and assessments, and recommending current and future hardware and software strategies and directions

Out of the tasks listed in *Tables 1 and 2* as belonging to 2246: Librarians, the only one where any of the professionals listed in Table 3 above may have input is task 5: "Managing library systems …". This is also purely from a technical point of view – i.e. ensuring that they system itself is actually working correctly.

MAPPING ABS CLASSIFICATIONS AND OTHER PROVIDERS TO THE DATA AND INFORMATION MANAGEMENT CYCLE

TABLE 4

Data and information management cycle	Librarian current role	Librarian potential role	Other professionals/ providers in this space
Create			261; 2612; Google; Wikipedia
Collect (incl. collection development and mgt.)	✔		Data scientists/analysts; Google; Wikipedia
Describe (cataloguing)	✔		26; Google; Wikipedia
Organise (file naming)	✔		262;2621;
Compile	✔		Data scientists/analysts; Google; Wikipedia
Represent (information architecture)	✔		26; 262; 2621; 2632; Google; Wikipedia
Store	✔		26; 262; 2621; Google; Wikipedia
Retrieve	✔		26; 262; 2621;
Analyse	✔	✔	2247; Data scientists/analysts
Deliver/publish	✔		Google; Wikipedia
Preserve/curate		✔	26; Data curators; data scientists

LEGEND:

26:	ICT Professionals
261:	Business and Systems Analysts, and Programmers
2612:	Multimedia Specialists and Web Developers
262 and 2621:	Database and Systems Admins; ICT Security Specialists
2632:	ICT Support and Test Engineers
2247	Management and Organisation Analysts
(PD)	Professional Development opportunity

PART III: IDENTIFY THE ROLE AND SERVICES THAT ARE UNIQUE TO LIBRARY AND INFORMATION PROFESSIONALS

The predominant difference observed from the ABS classification comparisons in part II is that librarians deal with the information/data itself – the content and the context. This includes any metadata. ICT professionals deal with the technical infrastructure: building it and maintaining it. As always, technology is the enabler, and granted, if it is not working, retrieving the (digital) information object is near impossible. But once retrieved, it is the librarian who makes sense of it by contextualising it to the task at hand. No other role that has been mentioned in this report has the end user of the information as its focus quite like the librarian.

The USP of a special librarian could be explained with a likeness to a car: the engineers design and build it (e.g. software developers /programmers), the librarians drive it (and know the directions of where they are going!), and the mechanics (e.g. network and support professionals) fix it if/when things go wrong. But it is the librarian who is in charge of understanding and interpreting the map.

SUGGESTED NEXT STEPS

Suggested next steps would be to consult skills/knowledge matrices of professional associations that represent the non-library professionals mentioned in this report, and complete a mapping exercise at a more granular level.

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