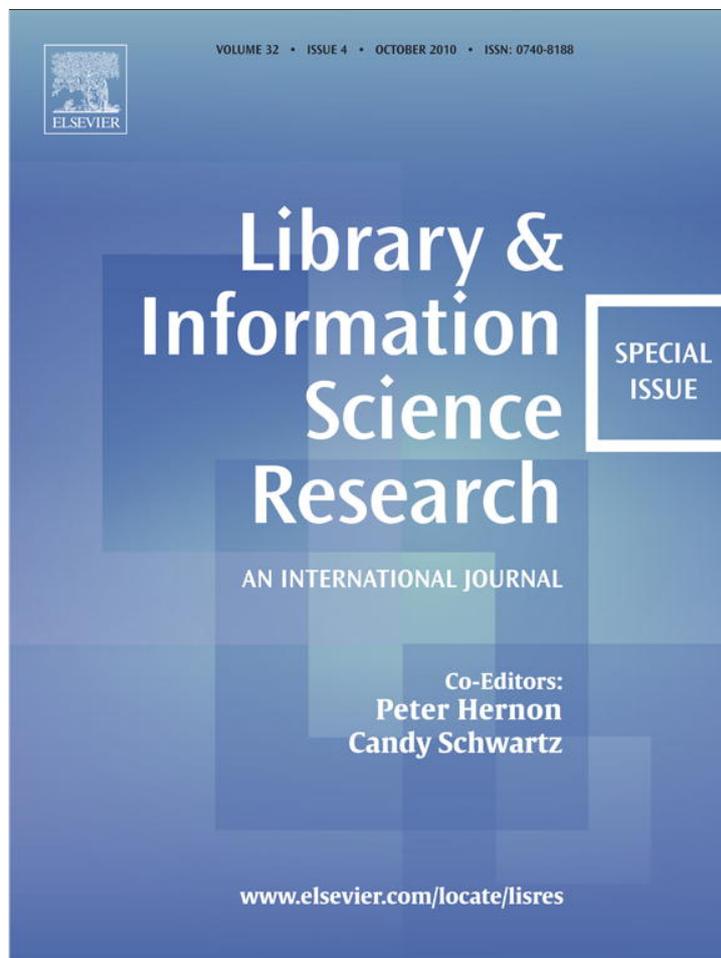


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Australian PhDs by LIS educators, researchers and practitioners: Depicting diversity and demise

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ABSTRACT

Analyses of more than 73,000 PhD thesis records in a comprehensive database of bibliographic records from all Australian universities from 1948 to 2006 demonstrate that PhDs on LIS-related topics reveal not only diversity of content, but also the diverse nature of the researcher's academic disciplines. This diversity includes researchers from within and outside LIS who bring to LIS—or take away—a variety of methods, approaches, theories and understandings. With 27 of Australia's 39 universities having produced LIS-related PhD graduates, the distribution through the Australian university system is evident and emphasizes the transferability of skills and knowledge which graduates bring to their work. It is possible that the diversity of researcher's disciplines, combined with the dangerously low numbers of LIS graduations, may also threaten the future of LIS research and education in Australia. Based on the findings of this study, the sustainability of LIS research and research training for the next generation in Australia is under threat.

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1. Introduction

Since the first PhD graduation in Australia from the University of Melbourne in 1948, no doctorates relating to library and information science (LIS) were produced in Australia until 1962. The first doctorate was awarded at the Australian National University but not from an LIS school or LIS department. Maguire (1998) reported in her paper on LIS research degrees in Australia that the first PhDs awarded through an LIS school or department occurred in the 1980s. These were awarded to Ida Vincent (1984) and Michael Talbot (1985) at the University of New South Wales and Monash University respectively. This article extends the work of Maguire, drawing on a database of PhD thesis records from all Australian universities during the last six decades from 1948 to 2006. Because this database includes all Australian PhDs since 1948, it includes non-LIS schools and departments, something that Maguire's study was unable to do. This is significant as it provides data on the production of LIS knowledge not previously recorded in relation to PhDs and includes the work of notable LIS researchers. Furthermore, it is based on a study which is a world first—bibliographic records of a nation's PhDs

have been classified by research codes which have enabled the determination of all theses completed in a particular field regardless of the school, department or faculty where the thesis was completed. In this case it analyses and discusses the doctoral graduations of current and past LIS educators, LIS researchers and LIS practitioners, whether or not their doctorate was undertaken in a LIS school or department.

2. Problem statement

Research is an integral dimension of any profession or discipline and library and information science is no exception. The PhD is central to building and sustaining research capacity and to the production of original knowledge. Establishing the status of PhD production and concomitant research capability in LIS is therefore of significance for the LIS community. However, very little has been written about LIS PhDs, especially in the Australian context. In the case of an emergent discipline such as LIS, PhD candidates come from outside the discipline and conversely many LIS researchers apply their research skills and knowledge in fields other than LIS. For this reason any research on the growth and projected sustainability of LIS research and research training must look further afield than the activity in known LIS departments and schools and consider accessible data on the broader field of PhD production. The Database of Australian Doctorates (DAD) allows for this kind of enhanced study.

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3. Literature review

3.1. Australian PhD production

In the mid-1940s, when the first PhD enrolments in Australia commenced, there were seven universities eligible to offer PhDs, and numerous tertiary colleges which were ineligible to do so. In 2006 there were 39 universities which all provided doctoral education. The Database of Australian Doctorates covers this transition. It includes the period when the binary system of higher education was put in place as a result of the Martin Report in the mid 1960s (Martin, 1964), comprising universities and colleges of advanced education (CAEs), and was later reformed into a unified national system (UNS) of higher education in 1987 (Dawkins, 1988). The consequence of this was that by the early 1990s the sector was comprised almost entirely of universities, with the addition of a few university-affiliated institutions which offered PhDs. Very few institutions of higher learning remained untouched organizationally during this period. Many of the pre-1987 universities merged with CAEs or campuses of CAEs, some CAEs became universities, and some CAEs merged with others and became universities. There were also some mergers with other types of colleges and institutions—including technical and further education (TAFE) colleges—as the process of “unification” unfolded. This eventually produced a university system comprising 39 large and small universities, many multi-campus, some multi-city, or even multi-state. An important change was that the UNS expanded both the demand for, and the supply of, PhD programs in Australia at a time when there had already been enormous growth in PhDs from their inception in Australia in the mid-1940s (Evans, Evans, & Marsh, 2008).

The ex-CAEs and ex-CAE campuses in the UNS sought to fulfill their new research and research training missions as part of being universities. It was clear that key aspects of this were both the recruitment of new staff with PhDs, and the support for existing staff without PhDs to obtain the degree (Evans, Evans, & Marsh, 2008). In addition, over the preceding years there had been a gradual shift to degree entry for many careers, and many of the necessary degree programs were provided in the CAEs (Macauley, Evans, & Pearson, 2009). The incorporation of these degree programs into the new universities intensified the pressure for their departments to become engaged in research and in training new researchers through PhD pathways. It is no coincidence, therefore, that the higher degree by research (HDR) enrolment numbers increased from about 15,000 to over 40,000 from 1990 to 2006.

In late 2001 the Australian government introduced the research training scheme (RTS) as part of a package of reforms initiated in 1999 by the then Minister for Education (Kemp, 1999). The intentions were to focus HDR places in areas of research strength, to reduce completion times and increase completion rates. The RTS significantly changed the way domestic HDR places were allocated and funded by capping places and allocating them on the basis of previous HDR completions and university research performance, and by reducing the funded period for PhDs from five to four years (full-time equivalent) (Evans, Evans, & Marsh, 2008). The other major change has been the increase in international HDR candidates enrolled at Australian universities. Although domestic HDR enrolments have had little growth in recent years due to the RTS, international enrolments have doubled from approximately 4000 in 1998 to about 8000 in 2006 (Evans, Evans, & Marsh, 2008). Almost all of these candidates are enrolled full-time on-campus, whereas nearly 40% of domestic candidates are enrolled part-time and are (effectively) off-campus (Pearson, Evans, & Macauley, 2008).

3.2. LIS PhD production in Australia

As mentioned above, very little has been written about Australian LIS PhDs. Whyte's, 1978 *Australian Library Journal* article “Higher

degrees by research” was typically provocative and included the subsequently often quoted “... the possession of a doctoral degree is necessary for academic appointments in universities and this fact has led to the claim that higher degrees exist to supply ‘union cards’ for academics” (Whyte, 1978, p. 39). As usual, Whyte was ahead of her time as a decade later the Dawkins reforms were implemented and the push for all academic staff to have doctorates commenced in earnest. In more recent times, Smith has written on doctorates relating to professional development for LIS educators (2006), and the role of professional associations in fostering research (Smith & Harvey, 2006). Harvey also has looked at the topic of doctoral-level research in library and information management addressing professional needs (Harvey & Wallis, 2006). Macauley (2004) challenged practitioners to embark on doctorates to enhance their professional practice and Haddow and Klobas (2004) studied the difficulties of communicating research to practice.

A special issue of *Education for Library and Information Services: Australia* contained Maguire's (1998) paper, referred to earlier, as well as six personal reflections from research graduates (both PhD and masters) who spoke of the impact of their LIS research and degrees on the profession, the personal value of their degree, and the influences on their careers. Judging by some of the article titles, “The PhD process: Torture, tension and triumph” (Bruce, 1998) and “From Mr to Dr, is it worth the effort?” (Li, 1998), the personal sacrifices were significant.

In contemporary times, important aspects of doctoral education to be considered are the diversity of doctoral candidates (Pearson, Evans, & Macauley, 2008) and multidisciplinary, interdisciplinarity and transdisciplinarity. Maguire's (1998) study focused on Australian LIS schools or departments and did not investigate PhD theses from non-LIS areas. A recent study by Sugimoto, Russell, and Grant (2009) used data from the MPACT database (<http://www.ils.unc.edu/mpact/>) to provide a comprehensive listing of LIS dissertations conferred by thirty-eight American Library Association accredited schools in the USA and Canada from 1930 to 2008. This study also considered theses/dissertations produced through LIS schools and argued that some other studies focused on the topic, not the school or program in which they were completed, and so did not provide an accurate portrait of doctoral education in LIS schools. Alternatively, it could be argued that their approach does not provide an accurate portrait of LIS doctoral research output and that the strength of the approach used in the present study is its inclusive coding of all Australian LIS theses, many of which would have been excluded if using a school-based approach. Rather, this article discusses all LIS-related theses that preceded doctoral offerings in LIS schools, theses supervised by those with relevant expertise who were based outside of LIS schools, and, importantly, LIS-related multidisciplinary research, which is often ignored in analyses.

4. Research design and methodology

The DAD, upon which this research is based, was compiled by the authors (Macauley, Evans, & Pearson, 2010). It contains 73,180 discipline-coded bibliographic records of PhDs produced at Australian universities (whether or not the candidate was from Australia), of which there are 56 PhD records from LIS schools, constituting 0.08% of the total. Another 58 PhDs included in these analyses were completed by LIS educators, researchers or practitioners in non-LIS schools, making a total of 114 theses, or 0.16% of the total.

The database has been constructed primarily by downloading bibliographic records from the National Bibliographic Database, hosted by the National Library of Australia (NLA) and included in their *Libraries Australia* catalog. To ensure the most comprehensive coverage, where possible, individual library catalogs from Australian universities were also searched and any records not listed on *Libraries Australia* have been included. This has resulted in the most comprehensive record of PhDs produced from Australian universities. In addition to the initial searches for the foundation of the database, the

National Library of Australia provided quarterly updates of new bibliographic records of Australian PhD theses uploaded from the respective university libraries into the their national database. To date, a total of approximately 80,000 PhD records are in the DAD database (1948–2010) and of those, 73,180 records have been coded for the period 1948–2006 upon which this paper is based. Of these records, 114 PhDs in LIS were selected.

To enable the relevant bibliographic records to be downloaded from *Libraries Australia*, a complex search strategy was constructed. The search strategy was modified a number of times to find the greatest number of relevant PhD records and reduce the number of false drops and duplicated records. This was a very challenging task, as differing interpretations of the *Anglo American Cataloguing Rules* by individual libraries and librarians can result in valid records not being picked up by the searches. A result of these cataloguing inconsistencies is that it cannot be categorically stated that every PhD thesis record produced from Australian university libraries has been located. In addition, if libraries were not cataloguing theses and/or not uploading the bibliographic records to their respective online catalogs, the records will not exist or will remain invisible.

It should also be noted that some variation occurs in thesis publication years and this slightly affects the number of PhD theses counted for a particular year. Most libraries consider the publication date to be the date of thesis submission for examination, while others use the date of doctoral confirmation from the academic board or senate, and a few use the date of graduation. The latter circumstance may result in the publication date differing from official university reporting of a PhD completion by 1 year.

4.1. Research Fields, Courses and Disciplines (RFCD) classification codes and coding of the Database of Australian Doctorates

The RFCD classification was used to code the database of Australian PhD thesis records. This classification was released by the [Australian Bureau of Statistics in 1998](#) (and revised in 2008) and it enables both research and development activity within the higher education sector to be categorized. The RFCD classification recognizes academic disciplines and related major sub-fields taught at universities or tertiary institutions, major fields of research investigated by national research institutions and organizations, and emerging areas of study.

The classification is arranged in a hierarchical structure. It has 24 divisions (2 digit), 139 disciplines (4 digit) and 898 subjects (6 digit) (Australian Bureau of Statistics [ABS], 1998). This project allocated only one RFCD code (at the six digit subject level) to each of the PhD bibliographic records. Although allocating more codes to the records would have been useful, this would have been very difficult for coders to do accurately and also would have added significantly to the budget for the project. Furthermore, the most suitable people to allocate multiple codes would have been the candidates and the supervisors/advisors, particularly where decisions need to be made regarding the percentage given for each code. Comments from the coders suggested that, at times, restricting a thesis to one code was difficult and allocating multiple codes would provide a more complete coding of the research projects. This recommendation has been made to government bodies by [Macauley, Evans, and Pearson \(2009\)](#).

4.2. The Australian and New Zealand Standard Research Classification (ANZSRC)

In March 2008, during the coding phase of this project, a revision to the RFCD classification coding was released. The new code “The Australian and New Zealand Standard Research Classification” (ANZSRC) replaced the RFCD classification ([ABS & Statistics New Zealand, 2008](#)). The new ANZSRC classification scheme provides a more finely detailed description of research areas with 1238 fields as opposed to 898 subjects in the RFCD classification. In the RFCD schema

there were, realistically, two extremely broad codes to cover LIS: “Librarianship” coded at 400201; and “Other Journalism, Librarianship and Curatorial Studies” coded at 409999. These were the two main codes in which the subset of records was determined for this article. In the new ANZSRC schema there are more options. The group covering library and information studies, 0807, has ten fields ([ABS & Statistics New Zealand, 2008](#)):

- 080701 Aboriginal and Torres Strait Islander Knowledge Management
- 080702 Health Informatics
- 080703 Human Information Behaviour
- 080704 Information Retrieval and Web Search
- 080705 Informetrics
- 080706 Librarianship
- 080707 Organisation of Information and Knowledge Resources
- 080708 Records and Information Management (excl. Business Records and Information Management)
- 080709 Social and Community Informatics
- 080799 Library and Information Studies not elsewhere classified

To provide more detailed analysis for this article, the subset of 114 LIS PhDs was also coded using the new ANZSRC schema.

4.3. Coding procedures

The PhD thesis records were downloaded from the *National Bibliographic Database* in bar delimited format which enabled importation into an Excel spreadsheet. Once in the spreadsheet, the records were sorted and checked and duplicates and false drops were removed. While the search strategy was amended to reduce the irrelevant records, manual checks of the downloaded records were still required.

Where possible, the records were distributed to coders according to their subject expertise. The ten coders chosen for the project demonstrated a wide range of relevant expertise between them, including sciences, engineering, arts, humanities and social sciences. Three had PhDs and another four had postgraduate qualifications. Three were librarians. Another two, a real estate agent and a Wikipedia editor, were chosen due to their considerable general knowledge. While one could not expect ten people to be expert in all areas, together their expertise covered many disciplines. If a coder felt unable to code records in particular fields, the records were referred to another coder. This was just one of a number of quality checks and balances incorporated into the project and these are discussed in more detail below.

The coders used the bibliographic records produced by librarians from all Australian universities rather than coding directly from the actual theses. The RFCD classification allocated to each thesis record was judged on a number of factors including: the thesis title, subject headings and call numbers (allocated by the institution's librarians), the Department/School/Faculty with which it was completed, and an abstract (where provided). Additional resources were used to clarify terms, including specialist print and online dictionaries, and connecting online to *Libraries Australia* for relevant links. To ensure consistency a number of processes were implemented. All coders were provided with training and a buddy system was initiated where the newer coders were partnered with a more experienced coder. While there were some face-to-face meetings, most of the dialog took place via email with all coders being involved. More urgent issues were resolved over the phone. The 114 LIS related records were then also coded by the new ANZSRC classification.

Once coders felt they were competent to undertake coding, a comparative coding exercise was introduced. This involved all coders coding the same set of PhD records. This process was undertaken twice throughout the coding to ensure a level of consistency with the

RFCD coding. In addition, a series of algorithms was designed using the Excel program to identify incorrect coding and these inconsistencies were subsequently corrected. Surprisingly, for such a large database, there were very few incorrect codes (i.e., typographical errors). The quality check found an error rate of less than 0.2%.

In addition to identifying relevant LIS PhDs through the coding of DAD, a number of other avenues were pursued to identify LIS individuals with PhDs. These included checking Australian LIS journals such as the *Australian Library Journal* and *Australian Academic & Research Libraries*, directories and lists of librarians, websites of LIS schools and the Australian Library and Information Association (ALIA) list of fellows, and conducting conversations with key Australian LIS researchers. The Database of Australian Doctorates was searched for all known LIS-related individuals with the title “Dr” or “Professor” and if not found in the PhD database every known instance was followed up. In all cases they were found to either have:

- a PhD from an overseas institution (and subsequently excluded from this study);
- been awarded a professional doctorate (and excluded from the study);
- a professorial title but not a PhD (and excluded); or
- in one or two cases, an honorary doctorate or a medical degree (and excluded).

4.4. Limitations of the method

There are limitations to both DAD and to the study itself. The limits to DAD include:

- some theses may never have been lodged in the appropriate library;
- some theses may never have been catalogued (i.e. lost in the system);
- some of the earlier theses that were catalogued using traditional card catalogs may not have been retrospectively converted to online catalogs;
- mistakes might be made in cataloging, for instance cataloging a PhD thesis as a master's thesis, meaning the bibliographic records will not be picked up by the search strategy; and
- lack of timeliness in cataloguing theses and uploading the bibliographic records to Libraries Australia, so that in the latter years of DAD not all thesis records will be included.

Other limitations not related to DAD should also be noted. First of all, any subject classification scheme is always playing “catch-up” with the creation of new knowledge in so far as there is a lag in the updating of schemas to reflect what has already been created. With respect to the population, there is a focus on PhDs and not professional doctorates, and Australian LIS researchers who received their PhDs from an overseas university were not included in the study.

5. Results

5.1. LIS PhDs by university

Twenty-seven universities have produced LIS-related PhDs and other PhDs by LIS educators, despite there being approximately only 10 universities with LIS schools or departments (Fig. 1). The number of universities with LIS schools has fluctuated over the period of the study. All universities with LIS schools have produced such PhDs, although not always from within those schools.

The University of New South Wales, with 30 LIS-related PhDs, has the largest number, almost doubling Monash University's total of 18. Next most productive are the University of Sydney with seven PhDs and the University of Western Australia with six; these latter universities do not have LIS departments. It is notable that these four universities are all pre-1987/pre-UNS universities. Such universities have produced 91 of the 114 theses (80%) compared with 23 (20%) for those universities established after 1987 which have offered PhDs for a shorter period than the pre-1987 universities. These figures also demonstrate the time lag involved for the post-Dawkins institutions to become established as research institutions, including the research capacity building of staff becoming credentialed with PhDs so they, in turn, can supervise the next generation of PhD candidates.

5.2. LIS PhDs and PhDs by LIS educators, researchers and practitioners

Growth in numbers of PhDs by LIS educators, practitioners and researchers was very slow and patchy from the first LIS-related PhD in 1962 (Fig. 2). There were very few such PhDs until the late 1980s—most years had no PhDs and few had years had more than one or two. Some notable LIS individuals who completed their PhDs at non-LIS schools in the early years included Roy Lundin and Laurel (Anne) Clyde. These preceded the first doctorates from LIS schools in 1984/85

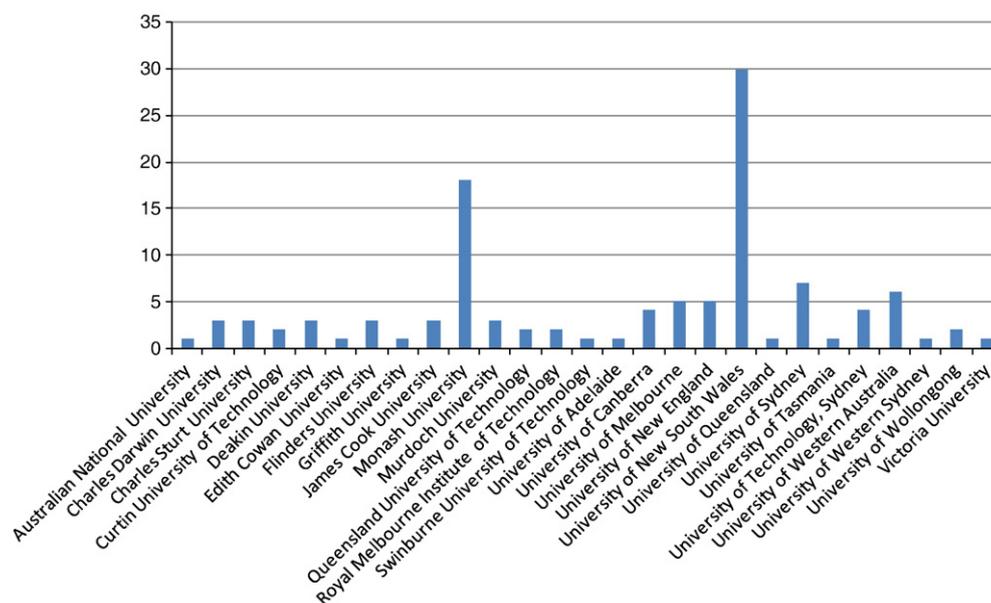


Fig. 1. PhDs by LIS educators, researchers and practitioners by university.

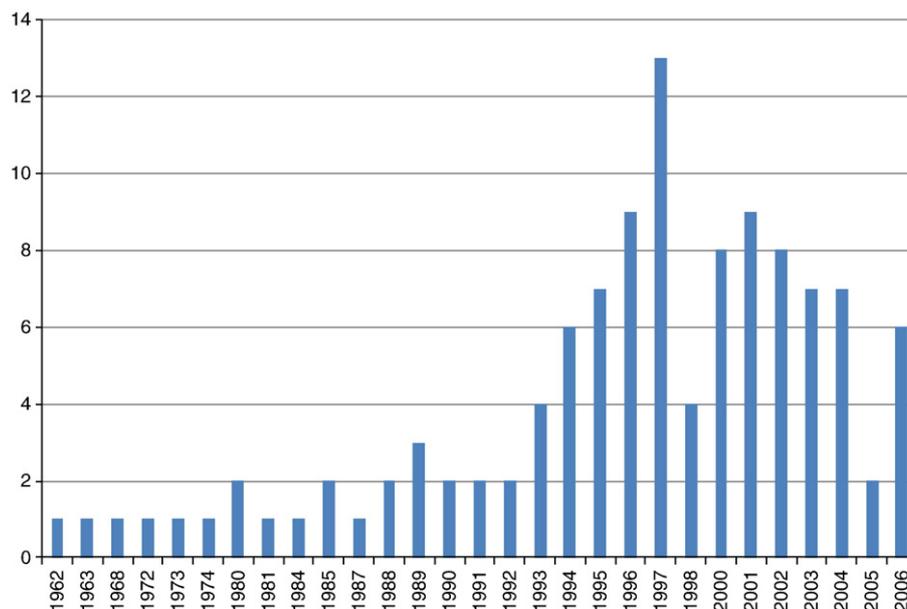


Fig. 2. PhDs by LIS educators, researchers and practitioners by year (not all years have graduations).

reported by Maguire (1998). There were three PhDs in 1989 before the real effect of the UNS had an impact in 1993 with four completions when the first post-UNS universities' PhD commencements were starting to graduate. The peak occurred in 1997 with 13 PhDs completed. Since then the graduations have steadily dropped to six PhD completions in 2006. However, as noted previously, the years 2004–2006 may be under-reported due to some thesis records not being catalogued and uploaded to Libraries Australia at the time of analysis.

114 PhD theses by LIS educators, researchers and practitioners were coded by the ANZSRC schema (Table 1). Sixty-six (58%) of the 114 theses were coded to the 0807 group "Library and Information Studies." Of these, twenty-two (19%) were coded as "Librarianship," seventeen (15%) as "Information Retrieval and Web Search," eleven (10%) as "Organisation of Information and Knowledge Resources," nine (8%) as "Human Information Behaviour," four (3.5%) as "Records and Information Management," and three (2.6%) as "Informatics." Four theses were coded to the related group "Information Systems."

Table 1
PhDs by LIS educators, researchers and practitioners by ANZSRC.

ANZSRC code	No.	ANZSRC description
	1	Division 03 chemical sciences
	1	Division 06 biological sciences
	4	Division 08 information and computing sciences
Group 0807 library and information studies		
080703	9	Human information behaviour
080704	17	Information retrieval and web search
080705	3	Informetrics
080706	22	Librarianship
080707	11	Organisation of information and knowledge resources
080708	4	Records and information management (excl. business records and information management)
	8	Division 13 education
	4	Division 15 commerce, management, tourism and services
	5	Division 16 studies in human society
	3	Division 17 psychology and cognitive sciences
	1	Division 19 studies in creative arts and writing
	8	Division 20 language, communication and culture
	12	Division 21 history and archaeology
	1	Division 22 philosophy and religious studies
Total	114	

The remaining forty-four PhDs by LIS educators, researchers and practitioners were in non-LIS fields. These included twelve PhDs in history and archaeology (including seven in Australian history), eight in education, eight in language, communication and culture (including three in Australian literature), five in studies in human society, four in commerce, management, tourism and services, and three in psychology and cognitive sciences. The remainder consisted of one PhD each in chemical sciences, biological sciences, studies in creative arts and writing, and the philosophy of religious studies.

In 2005 there were 64 LIS educators in universities, a reduction from 130 in 1996, (Hallam, 2007, p. 324). Of those 64, the majority have PhDs, mostly from Australian universities. Smith (2006), from a survey of the qualifications of Australian LIS researchers, found that 52% had a doctorate and another 26% were completing one. Ascertaining the number of LIS practitioners in Australia with doctorates is much more difficult. According to current figures from ALIA, 74 (1.6%) of the 4,532 individual members have the title "Dr" or "Professor" (which is likely to include many PhD-holders) (Personal communication, 16 February 2010). This compares with 1.3% of members in 2002/2003 and 1.6% in 2004/2005 (Macauley, 2005). This suggests two things: LIS educators, including retirees, comprise most of the doctoral credentialed ALIA members; and, the proportion of "doctored" ALIA members has remained stable since 2002. Anecdotal evidence suggests many, if not most, LIS practitioners in Australia who receive a PhD move into academe shortly afterwards. This increases the proportion of educators with PhDs, but reduces the proportion of practitioners with PhDs.

In relation to gender, women produced 59 (52%) of the PhDs and 55 (48%) were produced by men. This varies considerably from the gender proportions of ALIA individual members of 84% and 16%, respectively (Australian Library and Information Association [ALIA], 2007).

6. Discussion

It is arguable that the knowledge and skills attained by studying for a PhD provide valuable transferrable skills, and that the 44 non-LIS PhD graduates working in the LIS field are testaments to this. These graduates have all contributed to LIS in many and varied ways and have taught (including research supervision), and influenced numerous LIS students and colleagues. In fact, the diversity of knowledge

and skills, combined with the multi/trans/inter-disciplinarity they bring to LIS education and research enriches the field. However, this diversity and commitment to research outside the LIS field may also dilute the strength from within the field. It is clear that there are very few PhD-credentialed LIS educators, researchers, and practitioners in Australia and as a number of those people conduct research in other fields of study, the generation and production of LIS knowledge is reduced even further.

It is possible that the diversity, combined with the dangerously low numbers of LIS graduations, may threaten the future of LIS research and education in Australia. This is exacerbated by the fact that a number of the authors of the 114 theses discussed in this study were overseas students who returned to their home countries upon graduation. In a related study by the authors (Macauley, Evans, & Pearson, 2009), using analyses of DAD records between 1987 and 2006, it was shown the RFCD Discipline of Librarianship (one of 139 disciplines in the RFCD schema) remained static (0%) for the number of its PhD completions between the 1987–1991 and 2002–2006 5-year periods of PhD graduations while overall PhD graduations trebled in Australia. In contrast, Nursing had similar (9) PhD completions to LIS (6) for the 1987–1991 period, but had the second highest growth rate (behind Tourism) with 168 PhDs in 2002–2006, representing 1867% of the previous (1987–1991) period's total.

While the PhD completions have been dominated by the older, more established universities, the younger universities continue to develop their research capacity, including building their PhD credentialed staff. The Database of Australian Doctorates has been coded up to 2006, although the bibliographic records are still being downloaded from Libraries Australia on a quarterly basis. It is clear from the un-coded records that a number of LIS educators and researchers have received their doctorates in recent years, and this will go some way to delaying the demise of LIS research. That said, most of the LIS educators in Australia fit into the “Baby Boomer” category and retirements have already started to show an upward trend that will probably continue over the next decade. A considerable increase in LIS educators/researchers will be required to replace them. This is a major concern for the sustainability of the LIS profession in Australia. While these difficulties are certainly challenging, it also provides opportunities, particularly for younger LIS PhD credentialed people, or those prepared to undertake a PhD.

7. Conclusion

While LIS-related PhD output in Australia has been modest, the small numbers of researchers represent a base group that crosses a number of disciplines and who are graduating from a variety of Australian universities. This diversity strengthens Australia's LIS research base for the further production of new knowledge and the (re)production of new researchers with PhDs. This diversity includes researchers from within and outside LIS who bring to LIS a variety of methods, approaches, theories and understandings. With 27 of Australia's 39 universities having produced LIS-related PhD graduates, the distribution through the Australian university system is evident and emphasizes the transferability of skills and knowledge which graduates bring to their work. A number of the graduates undertook their research in fields relevant to LIS such as, education, Australian literature and Australian history. Indeed, 11 of the 22 ANZSRC Divisions were represented in the 114 theses in this study, including language, communication and culture; studies in human society; history and archaeology; commerce, management, tourism and services; and psychology and cognitive sciences.

This article is derived from DAD, the most comprehensive database of Australian PhDs in existence. An inclusive approach was taken in identifying and including theses relevant to LIS—that is, theses not just emanating from LIS schools and departments, but all theses coded on LIS topics, and also theses by LIS educators, practitioners and

researchers. Furthermore, due to the multidisciplinary nature of academic work, not all research undertaken in LIS schools is actually confined to LIS. Of course, as librarians understand more than most, classifying anything is not always definitive and this article has demonstrated some of those challenges. It is important to look outside of the LIS discipline when identifying LIS-related research in Australia and, indeed, internationally. While LIS researchers' contributions are usually readily identifiable within the discipline and/or profession, it is prudent to recognize that LIS research is also contributed to by scholars outside the fold. Furthermore, skills and knowledge flow in multiple directions and, while LIS has benefitted from the talents of those from allied disciplines, LIS has also enriched the skills and knowledge of other disciplines.

Based on the findings of this study, the sustainability LIS in Australia is under threat. What is obvious from this research, and probably no surprise to many, is that while some excellent LIS research has been produced, a problem is emerging for LIS research and LIS educators in Australia. The annual number of LIS PhDs graduations is very low. LIS does not therefore produce enough knowledge producers, and relatively speaking, the volume of LIS research is in decline. There is a consequent under-supply of PhD-trained academics for Australia and, as mentioned earlier a number of the international graduates return to their home land upon completion of their PhDs. The difficulties of having low numbers of LIS PhD graduates in Australia raises the question: will the lack of PhD production bring about the demise of LIS as a specialized field of study in Australia?

Acknowledgments

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