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# Deaccession of Print Books in a Transitional Age II: Business, Science, and Interdisciplinary Studies

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# Deaccession of Print Books in a Transitional Age II: Business, Sciences, and Interdisciplinary Studies

## **Introduction**

In a previous paper it was argued that deaccession of print books in the humanities and social sciences should be carried out in a step-wise, prudential manner, taking into account the limitations of digitization and interlibrary loan and the under-development of consortia. (Woolwine, 2014) This article is a follow-up study on the deaccession of print books in business and science collections and in those parts of collections which serve interdisciplinary studies and research.

## **Methodology**

This paper will use citation studies, studies on information seeking behavior, book format preferences and book format use (print versus electronic) to draw conclusions concerning deaccession of print books in business, science, and interdisciplinary studies in academic libraries. The method employed is a traditional literature review. (Torgerson, 2003)

## **Comparative and General Articles**

Slater (2010) in a review of the literature holds that “The literature to date indicates computer science, business and economics are consistently more heavily used in e-book format than their print counterparts.” (313) He notes that although electronic books allow more immediate access than do print books, that print books often provide more continuous access since electronic books, unless downloaded, require a connection to the Internet. Restrictions on downloading,

limiting viewing to a page at a time, print restrictions, and one-user access licenses, have prevented a wider acceptance of electronic books. (314-315) Lack of content in some academic subject areas has also restricted purchasing and general use. (321) Ordering electronic books is often more complicated for librarians and pricing models sometimes make them, in fact, more expensive than print titles. (325) The cost differential between electronic books and print books in academic libraries has been confirmed by Bailey, et al. (2015) All of this has restricted overall availability, use and ultimate acceptance. The most important finding of Lamothe (2010, 2012, 2013) is that the size of the collection of electronic books increased use. This was also the finding of an earlier study in which, although the conclusion was not explicitly drawn, those disciplines with the largest number of electronic books tended to have the highest number of uses and highest average use. (Sprague and Hunter, 2009) Lamothe also notes that reference books in electronic format were more likely to be used than non-reference monographs.

Staiger (2012), in a summary of literature on the use of electronic books across disciplines, found that studies supported the conclusion that academic users of electronic books search in them for bits of information rather than read them thoroughly. Whether this differs from standard use of academic books is not established. He also found that those in the social sciences and humanities were the least likely to be satisfied with electronic books.

Tenopir, Volentine and King (2012) conducted a large survey of British academics in multiple disciplines. They found that articles were considered most important overall for research purposes but that academics gather information from a variety of sources, with both the Internet and personal contacts supplementing library resources. They also found that books remain important to academics for both teaching and research, especially in the humanities. Those in the humanities read on average 20.5 books or book chapters per year, social scientists read 9.02,

engineering and technology faculty read 5.27, medical and health faculty read 3.7 and other scientists read 3.04.

Catalano (2013), in a meta-analysis of the literature, found that most of the patterns hold for graduate students. Graduate students in the humanities expressed some concern about the continued availability of older materials in an environment dominated by electronic resources. Art students did not find electronic resources entirely satisfactory. Graduate students in business were more likely to use electronic resources than were those in the social sciences and humanities. (262-263)

### **Business**

Fisher (1985) published one of the few research articles on deaccession of business and economics books. Influenced heavily by Slote (1982), he advocates for a combination of circulation and other use statistics and imprint date to determine whether to deaccess. He argues, however, that “The reading and research interests of library patrons are too diverse and dynamic to make categorical weeding decisions based upon the use of one methodology only. Within reason, any and all applicable methodologies should be used.” (35) He also excluded a priori “classical or standard works from weeding considerations.” (31). To a large extent more recent studies, reported on below, support these two suggestions.

Simon (2011) summarized studies of the information-seeking behavior of business students from 1995 onward. She found support for the belief that business students prefer electronic resources to print resources overall, viewing them as quicker and more convenient to use. (264) Simon argues that faculty members model information-seeking behavior within disciplines which students then follow. (263) She notes that Sabine and Sabine (1986) present evidence that

readers of non-fiction tend to browse, skip, and search in books and that Bunn and Lavin (1992) have argued that business research requires students to piece together information from a variety of sources. Simon argues that the stage was set for greater acceptance of electronic books by business students and draws the conclusion that business reference materials are especially suited for this type of reading and searching online. (266) She cites Nicholas, et al. (2010) to support the belief that business students are heavy users of the electronic format for textbooks. (272)

More recently Costello (2014), surveying graduate business school faculty, students and staff of the Fuqua School of Business at Duke University, found some continued preference for print books although the results were mixed. Over 60% of the respondents indicated that they did not use electronic books. For textbooks, 55.8% indicated print as the preferable format, 24.3% electronic books on a reader, and only 23.8% electronic books on a computer. (324) Respondents 35 years and older were more likely to prefer electronically formatted textbooks and the authors speculate that the reason is that older students were also more likely to be distance learners. Respondents preferred reading computer software guidebooks in electronic format. Career development books received more votes for electronic formats (37.8% for readers, 25.9% for computers) than did print (40.3% ). (326) Here older respondents were also significantly more likely than younger ones to prefer electronic books. (325) Finally, only 38.9% chose print as the most preferred format for reading a popular business title. (326) The findings on textbooks are supported by Cuillier and Dewland (2014) who, using a small sample of students in an undergraduate accounting course, found that the majority of respondents, after using an electronic textbook for a semester, still preferred the print format. (38)

Koch (1979) uses a citation analysis of *The Journal of Business Communication* from 1972 to 1977 to discover what sources business scholars use. She found that for this time period the

division was approximately equal, with 42.7% of the citations being to journals and 47.5% to books. (Other formats made up the difference.) (45-46) Citations to journals were from relatively recent ones (with over half being less than ten years old) and from a small number of titles. The majority of citations were from the journal itself, followed by other business journals, and social sciences and psychology journals. (46) The most frequently cited book was a “source book” written in 1964. (48)

Reinsch and Lewis (1993) performed a follow up study on the same journal for the years 1978 to 1992. They found a shift over time toward greater citation of journal articles. Articles made up 44% of citations in 1978-1982 and 55% in 1988-1992. Books made up 40% in the earlier period and 36% in the later one. (444) However, the number of books cited increased overall, being outstripped by increased numbers of journal article citations. For instance, the number of overall book citations increased from 474 in 1973-1977 to 1099 in 1988-1992. (444) This complicates the picture for book collection in business although it is also in line with the general trend of increasing numbers of citations in scholarly writing. The subfield studied was business communication. As will be noted below, for collection development purposes, it may be necessary to treat subdivisions within business differently. Business communication is also an interdisciplinary field and the article states that the most frequently cited books for the whole period were in communication theory, social psychology, management, rhetoric, and writing. (445) This indicates that much of the collection development, retention, and deaccession decisions for this area of business scholarship will be made by librarians not necessarily charged with developing the business collection and that consultation between library specialists may need to take place.

Dewland's (2011) study of the citation practices of business school faculty at the University of Mississippi for the five years prior to 2005 found differences in percentages of "non-journal" citations by departments. Twenty-two percent of the citations in scholarly articles were from non-journals sources overall. Management faculty citation of non-journal sources was 28%, marketing 20%, management information systems/productions operations management 23%, and finance 7%. (148-149) This indicates a profound difference in use of resources by faculty in finance.

Calabretta, Durisin and Ogliengo (2011) performed citation analysis on the *Journal of Business Ethics* for the years 1982 to 2008 to discover the intellectual structure of the field. The goal of their article was not to uncover the role books play in research in the subdiscipline but it can be used for that purpose. Article citation dominates throughout but there are changes as the field "matures." They argued that one indication of the maturing of a field is that authors "gradually shift from citing mainly books covering a range of topics to referencing journal articles on a specific topic under study." (500) The type of books cited also changes. The earlier highly cited texts are books such as De George's *Business Ethics* (1982). (This remains cited throughout in its various editions but not as highly at later periods.) Another highly cited work is Rawl's *A Theory of Justice* (1971), usually categorized as philosophy, and which also continues to be cited over time. As specific questions and paradigms develop other books are highly cited. The authors uncovered three co-citation clusters representing research traditions; ethical decision making, corporate social responsibility, and "a theoretical discussion on business ethics' moral foundations." (509) Seminal book publications, which tend to be highly cited, vary by research tradition. Among those mentioned as important for individual decision making in organizations are Kohlberg's essay "Stage and sequence: the cognitive-development approach to socialization"

in the *Handbook of Socialization Theory and Research* (1969), his *Essays on Moral Development* (1981), Rest's *Moral Development: Advances in Research and Theory* (1986), and Gilligan's *In a Different Voice* (1982). (514) Likewise Freeman's *Strategic Management* (1984) played a seminal role in corporate social responsibility research. (517)

Uyal (2010), also largely using co-citation analysis, looks at a set of journals from 1988 to 2007 which all have some focus on, or treatment of, business ethics in accounting. He found some of the same core, highly cited, seminal works (e.g. Kohlberg, Rest) as did Calabretta, Durisin and Ogliengo. He also notes that the majority of highly cited books came from disciplines "ranging from sociology to philosophy to psychology." (144) Similar to the previous study, Uyal uncovers clusters of research interests for the period. He labels these "Moral Cognitive Development/Ethical Reasoning and Decision-Making", "Accounting Ethics Education/Teaching/Critical Implications", "Economics of Ethics and Implications for Ethical Decision-Making Models/Contextual Constituents", and "Professional Ethics/Ethical Codes". The moral cognitive development co-citation cluster included the "core publications" of the accounting ethics literature with six of the seventeen seminal works being books. (155)

Following the passage of the Sarbanes-Oxley Act there is an expansion of the core documents, in the period from 2003-2007, to include those from the economics of ethics and implications of ethical decision making research tradition.

For collection development purposes this indicates that a number of books have played a major role in business ethics scholarship and that there exist seminal and frequently cited works which business librarians may wish to retain in some format. Some of these may be core to the whole subfield of business ethics, and some only relevant to certain research areas. This core of highly cited books may change as research interests change in response to factors both external and

internal to the discipline. Business librarians need, therefore, to know of such core works and to monitor the field for paradigm changes and changes in research focus.

## **Sciences**

Citation studies in science have long supported the view of science as structured differently than other disciplines. Important knowledge in the sciences is constituted by frequently cited works and by the work of an elite of highly influential and unusually productive researchers. Derek de Sola Price (1963) made the claim early on that modern scientific research is dominated by a small number of frequently cited researchers. This was confirmed by Eugene Garfield (1981, 1984). In a more recent work, Parker et al. (2012) find support for this description of scientific productivity and citation. They found that the most highly cited authors in environmental science and ecology are extremely productive, authoring on average over a hundred articles in the course of a lifetime.

The importance of sources other than books in science has also been noted. The reliance on prepublications, copies of conference papers, and personal communication among scientists is documented in Garvey (1979). Garvey also notes that journal articles, rather than books, are the main source of information contained in published works in science. Another difference, given the importance of pre-prints, is that peer reviewed articles serve less as a source of information for scientists than as a way of making that information publically available and preserving it historically. (69) Publication in scholarly journals also establishes priority in publication in science. (75) Belefant-Miller and King (2000) show that scientists tend to read more articles than non-scientists, spend less time reading the documents and that the median year of the articles accessed is the current year. Tenopir and King (1997) and King and Tenopir, (1999) also

found scientists more inclined to read articles than books. Niu and Hemminger (2011) bring the issue up-to-date with a large sample of 2,063 research academics in natural science, engineering and medical sciences. Their study supports earlier research that journal articles are more important than books for research scientists. However, graduate students tended to read books more frequently than do others in science. There was no statistically significant difference in the reading habits of those in the life-sciences and those not. (341) Furthermore, by the 2000's there is clear preference for electronic access for journals over print. (342) A majority of scientists however preferred a mix of print and electronic for reading depending on the circumstances. (343) Finally, the authors found a greater acceptance of reading online than did Tenopir's (2003) study.

Tucci's (2011) focus group of computer science and engineering faculty revealed that most faculty members went directly to the Internet to search for information. Most used a variety of sources such as the websites of other faculty members, databases at their own and other libraries, or at firms where they were consulting. Effectively science faculty sought information where they could. They also rarely visited the library to use books and preferred that funds for print book purchases be transferred to licensing more journal databases or electronic books. Using a small sample, Foote and Rupp-Serrano (2010) found geoscience faculty "well disposed" toward electronic books and "graduates student even more so." (230) Zhang and Beckman's (2011) survey of chemists, biochemists and biologists found that electronic and print books were preferred almost equally (electronic books 53%, print 47%). They drew the conclusion that both would continue to be in use by scientists for some time. This conclusion may be unwarranted as the comments by scientists in the article indicate that electronic books were more acceptable for up-to-date research topics and as reference books and were particularly useful when

downloadable. Multiple user capacity and the ability to print out only the parts needed were also valued.

### **Interdisciplinary Studies and Interdisciplinary Work within Disciplines**

Foster (2005) looked at the information-seeking behavior of interdisciplinary researchers and found that on the whole the behavior fell into three stages: Opening, Orientation and Consolidation. “Opening” for interdisciplinary researchers involved “expansion of information horizons” and included seeking out a range of information sources, types, concepts, and disciplines. (6) The research style of interdisciplinary scholars was also extremely open-ended. Tolerance for spending a lengthy period of time seeking information and encountering it in both an active and passive manner was also characteristic of interdisciplinary researchers. Networking was part of the opening period. This included all sorts of personal and online channels. Keyword searching was often less useful than forms of browsing. “Browsing was found to be a key process for accessing information...to information seekers who needed to change their disciplinary focus.” (6) Chaining (following citations through bibliographies) as described by Ellis (1989) was important but Foster views interdisciplinary research as involving a type of chaining of ideas as well. Serendipity as a separate factor was also noted. “Orientation” involved problem definition, picture building, reviewing information gathered, identifying keywords, grasping the shape of existing research, and identifying disciplinary communities. (7) “Consolidation” is “knowing enough” followed by “refining” and “sifting” information. (7-8) They were found to be flexible and adaptable. Interdisciplinary scholars were willing to learn about, and adapt to, different disciplinary cultures, open to different approaches, to be “nomadic” and “holistic” and, on the whole, were non-linear in their approaches. (8-9) The implications for collection development and retention is that interdisciplinary researchers are perhaps the most

likely to seek information from a variety of sources and from different time periods. Retention of older materials and materials in a wide range of disciplines may be necessary to serve their needs.

Some insights into interdisciplinary needs can be derived from the library literature but variations occur by areas of research. What follows, therefore, is suggestive only. Antell (2012) argues that scholars in LGBT studies appear to draw a third of their information from books and almost half from academic articles. Popular magazines and news sources, popular books, non-scholarly publications, and other sources make up the difference. (588-589) Even highly cited books in LGBT studies are cited relatively rarely, pointing to a wide diversity of sources used. The most highly cited books in Antell's sample were popular ones in the "self-help" category. (595) The median age of publication for cited academic books was 10 years and the average was 16.1 years. (595) Medical books were highly cited and other sources cited were over fifty years old. (600) Zhang (2007) argues that scholars in international relations rely more heavily on books than on journals with government publications a distant third. (199) Although relying entirely on journal citations, Weissinger (2013) draws a general picture of the field of Black studies as one divided by scholars publishing largely in, and citing, discipline specific journals and those publishing in, and citing, largely Black studies journals and popular publications. (49). Finally, Antunez, Toevs, and Gains (2014) examined the research habits of gerontology faculty. They found them to use a wide variety of resources, including journals in multiple disciplines, books, and grey literature (e.g. reports from non-profit organization, educational materials, government documents and websites).

## Conclusions

An overall conclusion that can be drawn is that electronic books find more acceptance among faculty and students in the sciences and in business than they do in the humanities and social sciences but that business faculty and students do so with caveats. A significant percentage of business students appear to prefer print for reading some books, especially textbooks.

Furthermore, although business scholarship is structured around journal articles, some books remain important. These vary by subfields and over time as research interests change. Business librarians need to possess a knowledge of the needs of faculty in business subfields and the deaccession of seminal, historically important or currently highly cited books, in specific areas, should be avoided. Finally, some subfields, for instance business ethics and business communication, are interdisciplinary fields and should be treated as such by collection development librarians.

Scientists are exceptionally comfortable with electronic resources of all types and are the least likely academics to read or cite books. This is largely due to their overwhelming need for the most up-to-date information which is rarely held in science books. Books relevant to the history, sociology and philosophy of science should be retained if they serve the needs of the local university but academic collections in the sciences are the ones most likely to move quickly to electronic formats. Interlibrary loan is likely to serve the few needs scientists have for other materials. If space and cost considerations are important for academic libraries the sciences, and some areas of business, are those where the most extensive and more immediate deaccession of print materials can occur.

Interdisciplinary studies function more like the humanities in the unpredictability and range of resources used but specific needs vary by area of study. Books located in the humanities or social science collections should be treated as such for deaccession purposes. Specifically, both Black studies and LGBT studies appear to require some access to popular as well as academic resources. International relations faculty may continue to have a relatively high reliance on books but also require government documents. Gerontology relies on grey literature as well as journals and books. A knowledgeable librarian must develop a unique collection development and deaccession plan for the specific types of interdisciplinary studies at her university and the cooperation of other subject librarians is necessary in preserving relevant books and in making deaccession decisions. Close collaboration with faculty members working in an interdisciplinary field is also required.

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