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Elaine M. Lasda Bergman
University at Albany, State University of New York, elasdabergman@albany.edu

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Social Gerontology: Integrative and Territorial Aspects:

A Citation Analysis of Subject Scatter and Database Coverage

Elaine M. Lasda Bergman

I.Abstract

To determine the mix of resources used in social gerontology research, a citation analysis was conducted to determine the mix of resources used in social gerontology research. A representative sample of citations was selected from three prominent gerontology journals and information was added to determine subject scatter and database coverage for the cited materials. Results indicate that a significant portion of gerontology research, even from a social science perspective, relies roughly equally on medical resources as it does social science resources. Furthermore, there is a small but defined core of literature constituting scholarly "territory" unique to gerontology. Analysis of database indexing indicated that broad, interdisciplinary databases provide more comprehensive coverage of the cited materials than did subject specific databases.

II. Introduction

Increasingly, scholars describe various academic programs as being "interdisciplinary" in nature. Many writers discuss and consider the qualities that make a program or field interdisciplinary. Michael Winter stated that an interdisciplinary program fills one of two criteria: either it serves an "integrative" function or a "territorial" function (Winter 1991, 1-3). Social gerontology can

be described as the "social perspective and analysis of aging (Phillips, et al. 2010, 1). This field is to in contrast to geriatrics, which generally refers to the study of aging from a medical perspective. Although the terms are sometimes used interchangeably, for the purposes of this article, "social gerontology" or "gerontology" will refer to the study of aging from a social science perspective and "geriatrics" will refer to the medical specialty of studysing aging.
The study of social gerontology may meet both of Winter's criteria for interdisciplinarity . It "borrows" from social welfare, sociology, psychology, medicine, demographics, public policy, consumer science, and so forth; hence the field is "integrative." At the same time, none of these disciplines adequately cover the knowledge that this specialization captures, thus giving social gerontology its own intellectual "territory." Despite the presence of these characteristics, increasingly some scholars have indicated the subject area is becoming more discretely defined (Lowenstein 2004).

Building a social gerontology collection in an academic library poses a familiar challenge faced by librarians working in other interdisciplinary fields: relevant materials must be gleaned from a variety of disciplines and fields in order to build a robust and comprehensive library collection. Often a collection developer must search within narrowly defined subfields of other subjects in order to locate the appropriate items for purchase. For these bibliographers, knowledge of the subjects of materials utilized by social gerontology researchers in their publications points the way in determining where to seek materials that do not fall within social gerontology's unique "territory" but are still important to a comprehensive social gerontology collection.

This paper seeks to explore subject scatter and the database coverage of articles cited in current social gerontology literature by analyzing a representative sample of citations in selected key social gerontology journals to describe the material these researchers cited. Evaluation of these materials provides information about the mix of resources used (books, journal articles, conference proceedings, etc.). An analysis of the range of subjects used in the literature (subject scatter) will be performed by identifying *WorldCat* subject descriptors assigned to journals and monographs. Finally, this paper will compare the indexing of the cited journal articles in library databases which librarians frequently recommend for social gerontology research.

III. Literature Review

1. Citation analysis generally

Scholars have used various forms of bibliographic or citation analysis for decades to make determinations about characteristics and qualities of scholarly research in many fields and disciplines. Nisonger (1992) provides a history of this technique and an annotated bibliography of many significant works using this methodology. He states that a citation analysis "helps clarify both the information needs of researchers and what should be contained in a research library collection "(98). A more recent literature review of citation analysis methodologies sought to determine the motivations behind a researcher's decision to cite a work, and found that the motivations are affirmational, assumptive, conceptual, contrastive, methodological, negational, perfunctory and persuasive (Bornmann, et.al. 2008, 66-67). Researchers debate the merits of citation analysis as a methodology for determining collection development needs but it

is generally agreed that this technique should be used in concert with other means of evaluating collections, such as contacting experts in the fields and gaining their opinions (Nicolaisen and Hjørland 2007;Broome 2007).

It is common in the library and information science world to use citation analysis to identify core journal collections and other characteristics of subject or disciplinary literature. For example, Palais (1976) looked at the *Ulrich's* categorization of political science journals to assess subject scatter and the inclusion of core journals in key indexing and abstracting services, concluding that the common indexing and abstracting services for that field do not comprehensively index journal titles or take into account the subject scatter of materials used by political scientists. Mack (1991) compared a citation analysis of the journal *Signs* with a faculty survey, and found that there was a correlation between the most frequently cited journals and those ranked highest by faculty. Heidenwolf (1994) checked citations from key epidemiology journals to determine the availability of the cited materials in the University of Michigan's Public Health Library. Mahowald (1995) identified core materials by format and language for Russian and Slavic History. Reed (1999) undertook a study of citations in major occupational therapy journals, identifying subject scatter and database indexing. This study was updated by Potter in 2010, who identified an increased diversity in the literature used as well as improved indexing in key medical databases.

In addition to analyzing citations to identify core journals, scholars have also used bibliographic analysis to investigate the format and type of information by cited by particular types of scholars, including undergraduate honors students, engineering master's students, social work scholars,

and pharmacy faculty (Leiding 2005; Holden, et.al. 2005; Williams and Fletcher 2006; Green and Secret 1996; Choinski 2007).

Studies of database coverage and/or overlap often use citation analysis to determine bibliographic databases most relevant to a given subject. The previously mentioned study by Palais (1976) included database coverage in political science databases. Frandsen and Nicolaisen (2008) studied the database coverage of varying subfields and research traditions in economics and psychology, and found that coverage of different specialties varies even in a subject specific database. Frandsen and Nicolaisen found that this bias in coverage of different databases impacts data analyses depending on which database is used to obtain the data being analyzed. Hood and Wilson (2001) studied the overlap of different databases by analyzing many different types of subject searches in 200 *DIALOG* databases. They concluded that 5-10 databases must be searched to obtain 80% of the significant literature needed to undertake a thorough literature review.

2. Citation analysis for interdisciplinary subjects/topics

Although a source like *Journal Citation Reports* (*JCR*) can be used to identify core collection journals in well-established disciplines, it is not as helpful at identifying such journals for multidisciplinary or interdisciplinary subjects. As a result, there have been myriad citation analyses for interdisciplinary topics and newly emerging fields, including international relations, agricultural economics, cultural anthropology, fuzzy set theory, medieval studies, nanotechnology, later life migration, police administration, communication disorders, and southern studies (Zhang 2007(a); Zhang 2007(b); Robinson and Posten 2005; Hood and Wilson

2003; Herubel 2005; LaBonte 2005; Walters and Wilder, 2003; Joswick 2001; Black 2001; Adams 1992).

Kushkowski, et al. (1998) created a methodology for obtaining a ranked journal list for a core collection by identifying the frequency of journal title indexing in various bibliographic databases. They compare this methodology to Hirst's Discipline Impact Factor, which is a more subject specific means of analysis than the *Journal Citation Reports* (*JCR*) Impact Factor. They state that an indexing approach like this is best used for "fields lacking a specialized index to journal literature (486)."

Conversely, citation analyses have also been used to identify the range of subjects utilized by researchers in a field in order to assess the uniqueness of the literature in a given discipline (Wilson and Edelman 1996), determine the overlap of literature in one subject specialty versus another (Yitzhaki 1986), study author affiliation and discipline (Cheung 1990; Ortega and Anteil 2006; Grinnell and Royer 1983) or to identify emerging disciplines (Morillo, et al. 2003; LaBonte 2005).

Clearly, studying data gathered from the materials cited by groups of scholars can yield germane and relevant information which can assist librarians with collection development challenges as well as clarify the practitioner's specialty as an interdisciplinary field or even as an emerging discipline.

3. Citation analyses relating to Gerontology

Since the growth of the subject specialty of social gerontology in the early 1980s, scholars published several citation analyses related to the subject. Crandall (1982) studied all of the articles published in five gerontology journals over a five year period. He expressed concerns about the lack of scholarliness in gerontology research in the 1970s and 1980s; inconsistent use of terminology; issues related to the description, sample size and randomness of sample populations; and the short time frames, or incomplete data about the time frame used in the study. However, he did not analyze subject scatter or database indexing.

Rachal, et al. (1996) used citation analysis of six journals in gerontology to determine academic institutional productivity, stability, and patterns of authorship. The authors chose journals based on the scope – the emphasis of the journal had to be "socio-cultural," not "medical" (282). This article sought to measure the scholarly productivity of an institution as a way to evaluate the scholarly attributes of a given program.

Morrow-Howell and Burnett (2001) studied gerontology experts within the specialty of social work. The authors studied how many social work researchers published in *The Gerontologist* from 1995-2001, and the topics of their research. In a sample of fifty articles with a social work researcher as the lead author, topics were focused on caregiving, ethnicity, and formal service use. Those publishing in this journal with a social work degree constituted a small minority of scholars, and it is noteworthy that the study focused on scholars with a degree in a field that was not specific to gerontology.

These citation analyses relating to gerontological topics point to issues regarding the status of social gerontology as a discipline and the interdisciplinarity of the topic, as well as the quality of research and programs of study of gerontology. These topics focus around the debate of

gerontology as an academic discipline particularly examining the productivity of institutions and the level of scholarship within the field. While many of the conclusions reached by the researchers may provide bibliographers and collection developers with insight into the research landscape of gerontology, they do not provide insight into the subjects and disciplines of the materials used in gerontology research.

4. Collection Development in Gerontology

Although it appears that there have not been any citation analyses investigating the subjects used in gerontology, library and information science researchers sought to create tools for selecting and managing gerontology collections. A couple of early articles served as resource guides providing selection resources and identifying periodicals for rounding out a gerontology collection (Rafferty 1982; Owens and Casey 1985). Havens (1988) created an aging and gerontology resource guide for librarians, but this guide focused more of on consumer health than scholarly research. Finally, Maley (1993) noted the lack of a "single authoritative review journal for gerontology" and provided a number of strategies for gaining enough background to be an effective selector for gerontology collections.

5. Interdisciplinarity

What constitutes an academic discipline? When is a subject interdisciplinary, multidisciplinary or a discrete academic discipline? The literature documents this ongoing debate. Boisot 1972, 90) provides a formal definition for discipline, indicating that it provides a structure for studying

objects, phenomena, and laws of operation. Heckhausen (1972, 83-89) provides seven criteria for disciplinarity: *material field, subject matter, level of theoretical integration, methods, analytical tools*, and *applications of a discipline in fields of practice*; and conversely defined six types of interdisciplinarity: *indiscriminate pseudo-, auxiliary, composite*, *supplementary,* and *unifying*. Another researcher applies Hermagoras' concepts of "stasis" to the process of scholastic inquiry. The fourth stasis of "jurisdiction" identifies an interdisciplinary field, as when certain paths of inquiry "can be properly addressed only at the intersection of traditional disciplines" (Gross 2004, 153). The trend towards increased interdisciplinarity in literary research has been attributed to an increase in specialization within disciplines post World War II and the integration of elements from more than one traditional discipline into these splintered disciplines. Furthermore, the transformation of society in the 1960s led to the study of literature from more culturally diverse authors, and technology facilitated cross disciplinary examinations of research topics (Carpenter 1990).

As stated in the introduction, the concept of interdisciplinarity deemed most relevant to the current study is the notion that interdisciplinarity serves both integrative and territorial functions (Winter 1991). This means that the academic librarian must have an integrative perspective with regard to managing an interdisciplinary collection but at the same time understand that the patron community being served is primarily concerned with its specialties from a territorial point of view.

6. Is Gerontology a Discipline?

Michael (in Valletuti and Christoplos 1977) determined that the types of knowledge needed for gerontology are interdisciplinary, naming the topics of poverty, housing, safety, and health care as examples. At the time Michael wrote this, little research into the social service needs of the elderly existed (93-109). In years following, however, scholars began to more frequently debate the question as to whether gerontology was its own specific discipline. This debate has continued in the scholarly literature ever since. As early as 1985, Bramwell stated that gerontology meets the criteria for a discipline in terms of its "unique point of view," "methods of inquiry," "community of persons," uniqueness of "intellectual and/or aesthetic activity," and optionally, "provid[ing] fundamental knowledge" (202-208). Conversely, in 1989 Achenbaum and Levin asserted that the definitions, paradigms and methods of inquiry vary too greatly and lack sufficient standardized protocols for gerontology to be a cohesive discipline, stating that gerontology lacks "a discrete locus and boundaries" (398).

In the twenty-first century, Lowenstein (2004) evaluated the debate and added consideration of the following factors to the question of what constitutes a discipline: "theoretical developments, the proliferation of educational programs, and the institutionalized shaping of a discipline" (130). The application of the knowledge base in professional and educational contexts and evaluation of gerontological theories through various methods combined with the increased number of academic gerontology programs, journals, textbooks, research centers and professional associations, created cohesion in the field of gerontology and allowed it to become "one of the many new academic disciplines that have emerged in modern times" (139). Alkema and Alley (2006) discussed the progression of the field of gerontology into a discipline, noting that until 2005, members of the Gerontological Society of America could not even choose "gerontology" as their specialty: they had to select another discipline. However, the fundamental question of

gerontology: “What changes with age and what stays the same?” lends it cohesiveness despite the interconnections with other disciplines (577-79). Alkema argues that the diffuseness of the discipline results from a dearth of Ph.D. degree recipients in gerontology and because most gerontology faculty come from outside disciplines. In 2007, Ferraro wrote an editorial identifying some current trends in interdisciplinary study related to aging, namely in geographic/ecologic and biologic fields. He implied in his writing that gerontology is a clearly established field, but did not directly address the question of disciplinarity.

Gerontology clearly fits within the main definitions of what constitutes an interdisciplinary field. But is it a discrete academic discipline? The debate continues, but it if it is not already a discrete discipline, gerontology is still making headway from the perspectives of many scholars.

III. Research Questions

This article will seek to answer the following questions: (1) What are the general characteristics of literature cited in gerontology research? (2) To what extent do commonly recommended library databases for gerontology research index the sample of cited literature? (3)To what extent is gerontological research “territorial” versus “integrative;” in other words, to what degree does the research rely upon resources categorized squarely in the field of gerontology versus those considered to be outside of that domain? (4) What does this information indicate about the status of gerontology as a discrete discipline?

IV. Methodology

To determine the mix of resources used by gerontology researchers, their subjects, and their inclusion in database indexes, sample citations were harvested from *Journals of Gerontology, Series B*; *The Gerontologist*; and *Ageing and Society*. The journals were chosen for a combination of their social science focus, their circulation and/or Impact Factor, and the slightly different perspective each provides. Another important factor was that the citation information for these journals be available in the *Scopus* database which would be used to obtain the citation information. *Journal Citation Reports* combines the social science (gerontology) journals with the medical (geriatrics) journals (Institute for Scientific Information, 2007). The medically oriented journals had far higher Impact Factors than the social science journals. Circulation statistics from *Ulrich's* were also consulted (ProQuest, 2008). Also in Ulrich's combines geriatrics and gerontology journals in a combined category, and only journals with a social science focus were considered for this study.

The *Journals of Gerontology, Series B* is published by the Gerontological Society of America, and its importance to the study of aging is reflected in both circulation (5862) and Impact Factor (1.720). *The Gerontologist*, another publication by the Gerontological Society of America also had a high Impact Factor (1.965) and circulation from *Ulrich's* (6500). While there was some concern about having two publications from the same professional association, it was felt that the focus of each journal was slightly different: *The Journals of Gerontology, Series B* consists of two sections one which emphasizes psychology and one which emphasizes the other social sciences. *The Gerontologist*, on the other hand, emphasizes a broader, multidisciplinary approach including policy and service delivery (Oxford Journals 2011). *Ageing and Society* is a highly regarded interdisciplinary journal which includes materials from the social sciences, humanities and medicine, chosen again for its *JCR* Impact Factor (1.494) and solid circulation

statistics (1050). It was also chosen because it originates in the United Kingdom and thus broadens the purview of this research beyond United States –based publications.

Citations that appeared in volumes of these journals published between 2005-2009 were used for this study because this time frame is broad enough to get a diverse sample of recent research, and recent enough that the conclusions drawn from this study would be relevant to collection developers working today.

The *Scopus* database was used to harvest the citations from all articles in each of the three journals for the selected years. The first attempt was to harvest all cited references in a journal for a given publication year all at once, but it was found that the *Scopus* database automatically removes duplicate citations from the results when this method is employed. It was felt that a more accurate count of subject dispersal would be obtained if a resource was counted twice when cited by two different authors, rather than just counting it once. Therefore, instead of collecting a year's worth of citations at once, the cited references were retrieved and exported from one article at a time. This was a very time consuming process, although the simple conversion to a Microsoft Excel file was a convenient feature of the *Scopus* interface.

After the initial export from *Scopus*, the print journals were reviewed by hand to determine that all articles with citations were harvested. Unfortunately, this was not the case. Far more scholarly articles were missing from the database than anticipated. For example the entire Special Issue 1 of volume 62 of the *Journals of Gerontology, Series B* was missing from *Scopus* as well as a number of articles from other issues in volume 62. Other omissions also seemed to gravitate around specific years of the journals, such as the 2008 volume of the *Gerontologist* and the 2009 volume of *Ageing and Society*. The citation data for these articles had to be added to Excel

spreadsheets by hand – again, a very time-consuming process. Upon completion, it was found that Elsevier states in its *Scopus* documentation that while they are adding citation and other bibliographic information as an ongoing process, only 21 million of their 41 million records contain the cited references (Scopus, 2011). None of the publications utilized in this study were published by Elsevier, which could be a factor in the lack of information available in *Scopus*. Other researchers have noted similar types of errors, omissions, and inconsistencies in the ISI databases (Rice, et. al. 1989).

Once the citations were harvested from each article, hundreds of Excel files needed to be consolidated. Each line in the spreadsheet represented one citation, and additional metadata were added to the citations to identify the citing author, journal and publication year. These files were merged into larger files, one for each journal, and eventually all 42,368 citations were combined into one file.

Next, a sample was taken from the 42,368 citations collected. In accordance with Roscoe's recommendations, it was determined that a sample of 500 citations would be used (1975, 184). A random selection of 500 citations was obtained using the SPSS statistical software. Due to the format used by *Scopus* to export the citations into a .csv file, 13 citations were unidentifiable. The export function in *Scopus* obtains the metadata from the citations in journal format, regardless of the format of the citation. Specifically, only the headings of author, article title, publication year, source title, volume, issue, pages, and number of times cited are extracted from the *Scopus* database. When the item cited is not a journal article, the metadata that is exported is inconsistent because the information about the cited item does not always coincide with the standard headings in the spreadsheet. In many cases, there was partial information that was

exported so the item could be identified, sometimes by going back to the original citing article and looking at the reference list. However, the export failed to include data for 13 of the cited items – instead *Scopus* populated each field with phrases like [no author available], [no title available], [no source information available], etc. Several strategies were undertaken to try to identify these items, but the originating articles often had several of these items and it was unclear which reference made it in to the sample. It was finally determined that these items were most likely obscure items which would not be listed in *WorldCat* or *Ulrich's.* These were discarded and instead another citation was chosen at random from the same original article.

Additional metadata were added to the sample citations, including the material type (journal article, book, other) of the item. For books and monographs as well as journals, the initial *WorldCat* descriptor was ascertained in order to determine subject scatter. The results of the subject scatter analysis proved to be very granular in nature, and therefore each descriptor was assigned a broader category of scholarly tradition determined by the author to ascertain the mix of resources that were from a social science, medical, mathematics/statistical, or humanities tradition. This was done to get a more "birds' eye" view of the mix of resources used in social gerontology research.

In addition, for the journals in the sample, *Ulrich's* was consulted to determine whether or not a given title was indexed in any of several key gerontology databases: *Ageline, Abstracts in Social Gerontology, Medline, PsycInfo, Scopus, Web of Science, SocINDEX, Ebsco Academic Search Premier,* and *CINAHL*. These databases were chosen after viewing subject guides (LibGuides) of several university libraries with prominent gerontology programs and deriving a general sense of the databases most commonly recommended on these sites.

There were some materials which could not be located in *Ulrich's o*r *WorldCat, w*hen assigning the subject and indexing metadata to the records. These were also replaced with random citations from the original articles, for which such data could be found, in order to preserve the statistical significance of the sample.

Once all of the metadata were identified for each citation, the SPSS software was utilized to calculate frequencies and distributions for the material type.

(1) The frequency and range of publication year and initial *WorldCat* descriptors were tabulated for all monographs identified, regardless of specific material type. To obtain a broader view, each *WorldCat* descriptor was identified as social science, medical, mathematical/statistical or humanities to identify more general patterns.

(2) The frequency and range of cited journals by title, publication year, and initial *WorldCat* descriptors for each journal was determined, and in addition broader categories of social science, medical and other were assigned to these subject headings for a broader view of the breakdown.

(3) The percentage of cited articles covered in each of the key databases was tabulated to determine the most reliable resources for obtaining gerontology journal articles.

V. Analysis and Results

1. Material Type

The final sample of 500 included replacements for the 13 citations for which there were no metadata, as well as for the other results for which no additional data could be found in *WorldCat* or *Ulrich's.* In the final sample that was used, 80.0 %(400) of the citations were from journals, 16.8% (82) were books or book chapters and 3.6% (18) were other miscellaneous items. The miscellaneous items consisted of 7 government documents, 6 nongovernmental reports, and one of each of the following: working paper, data set, manual, conference proceedings and a dissertation.

2. Monographs

The monographs included all books and book chapters as well as all of those items in the "other" category, a total of 100 items. Suprisingly, each of these 100 items was a unique title, there was no duplication of monographs in this sample. The range of publication years spanned 1936-2008. Exactly half (50.0%) of the 100 cited monographs were published in the years 1997-2008. The most frequent publication year of cited monographs was 1995 (9.0%). The next most frequent publication years for cited monographs were 2001and 2003, each with 8.0%) of the cited monographs, followed by 1997 with 7.0%, and then 1999,, 2000, and 2004; each with 5.0% of the cited monographs [See Table 1].

Table 1.

Table 1. Monograph PY Frequency		
Publication Year	# items	%items
1995	9	9.0%
2001	8	8.0%
2003	8	8.0%
1997	7	7.0%
1999	5	5.0%
2000	5	5.0%
2004	5	5.0%
1982	4	4.0%
1991	4	4.0%
1994	4	4.0%
2006	4	4.0%
Total	63	63.0%

Table 2.

Table 2. Broad Subject Categories: Monographs				
	#items	%items	#descriptors	%descriptors
Social Science	74	74.0%	68	73.1%
Medical	19	19.0%	18	19.3%
Statistics/Math	5	5.0%	5	5.3%
Humanities	2	2.0%	2	2.1%
Total	100	100%	93	*99.8%

*percentages do not total 100% due to rounding

1995 was an unexpected result for the most frequent publication year; the later dates of the next most frequent publication years more closely reflects what was predicted. Since the difference between the number of monographs published in 1995 (n=9) is only different from the other

most frequent publication years by only one or two monographs, it is assumed that this surprising result is simply due to the relatively small sample. There was another anomaly, in that after 2004, the next most frequently cited years were 1982, 1992, 1991, 1994 and 2006, with each year comprising 4.0 % of the monographs. The 1982 publication year also did not fit the pattern of monographs from more recent dates being utilized. It was originally assumed that the four items from 1982 could possibly be statistical handbooks or manuals which were not date sensitive, however they all seemed to be social science related (psychology, anthropology, geography and social measurement). It is likely that the authors of the citing articles found these works to be fundamental texts on their subjects.

Subject scatter was determined by identifying the first descriptor in the *WorldCat* record of each itemThese headings varied considerably for the monographs, with 93 headings covering the 100 items. As a result, no cohesive pattern emerged from this analysis. In a broader view, 68 (73.1%) of the descriptors (constituting 74 individual monographs), were social science related, 18 (19.3%) of the descriptors (constituting 19 monographs) were medically related, 5 (5.3%) of the descriptors (constituting 5 monographs) were related to statistics or mathematics, and 2 (2.1%) of the descriptors (constituting 2 monographs) were subjects in the humanities [See Table 2]. The subject descriptors were also reviewed to determine how many of them specifically contained a term or phrase relating to aging, such as gerontology, older people, etc. Only 25 (26.8%) of the monograph descriptors (constituting 29 of the monographs) had such a term in them.

3. Journal Articles

The Journal article citations constituted 400 items in the sample [See Table 3]. The range of publication years for the journal articles was 1968-2009. Fifty-three percent of the journal articles (n=212) were published between 2000 and 2009. The most frequent publication years were consistent with this date range: 11.5% were cited in 2002 (n=46), 8.0% were cited in 2001 (n=32), 7.5% in 2004 (n=30), 7.5% in 1998 (n=29), 6.0% in 1999 (n=24), and 5.5% in 2005 (n=22).

Table3.

Table 3. Journal PY Frequency		
Publication year	# items	% items
2002	46	11.5%
2001	32	8.0%
2003	32	8.0%
2004	30	7.5%
1998	29	7.3%
1999	24	6.0%
2005	22	5.5%
Total	215	53.8%

Table 4

Table 4: Top 10 Most Frequently Cited Journal Titles		
Journal Title Frequency	#items	% items
The Gerontologist	29	7.3%
Journals of Gerontology, Series B	20	5.0%
Journal of the American Geriatrics Society	19	4.8%
Ageing and Society	13	3.3%
Psychology and Aging	13	3.3%
Journal of the American Medical Association	9	2.3%
Journals of Gerontology	6	1.5%
American Sociological Review	5	1.3%
International Journal of Aging and Human Development	5	1.3%
Journal of Aging and Health	5	1.3%
Psychological Bulletin	5	1.3%
Total	129	32.7%

Table 5

Table 5. Top 10 WorldCat Descriptors for Cited Journals		
Descriptor	#journals	%journals
Geriatrics--Periodicals	56	14.0%
Older People -- Periodicals	35	18.0%
Aging -- Periodicals	19	4.8%
Medicine -- Periodicals	18	4.5%
Aging-- Psychological aspects -- Periodicals	14	3.5%
Psychology-- Periodicals	13	3.3%
Social psychology -- Periodicals	10	2.5%
Sociology -- Periodicals	8	2.0%
Geriatric psychiatry -- Periodicals	7	1.8%
Psychiatry -- Periodicals	7	1.8%
Total	187	56.2%

Table 6.

Table 6. Broadened Subjects for Journal Articles				
Subject	#articles	%articles	#descriptors	%descriptors
Social Science	206	51.5%	69	51.4%
Medical/Scientific	187	46.8%	58	43.2%
Other	7	1.8%	7	5.2%
Total	400	*100.1%	134	99.8%

*****percentages do not total 100% due to rounding

The 400 articles in the sample appeared in 222 journals. The top five journals, representing almost one quarter (23.7%) of the articles cited, cited fall squarely in the social gerontology field: *The Gerontologist* with 29 articles (7.3%), *Journals of Gerontology, Series B* with 20

articles (5.0%), *Journal of the American Geriatrics Society* with 19 articles (4.8%), *Ageing and Society* and *Psychology and Aging* each with 13 articles (3.3%). Note that the three journals used to undertake this analysis also appeared in the top five cited journals. This could be partially attributable to journal self-citations, as other scholars have noted that articles in a given journal tend to reference other articles published in the same journal (Seglen 1997). The sixth most frequently cited journal is the *Journal of the American Medical Association*, a medical journal. The top 20% most frequently cited journals (n=80) contained 64.8% (n=259) of all of the citations. The vast majority of journal titles – 177, or 80% of the titles—contained only one cited article. Conversely approximately 44% of the articles were from unique journals [See Table 4].

The initial *WorldCat* descriptor for each journal was ascertained to determine subject scatter [See Table 5]. The 400 articles came from journals with 134 different primary descriptors. The five most frequently assigned descriptors for the periodical articles were: "Geriatrics—Periodicals "with 54 articles (13.5%); "Older people—Periodicals" with 35 articles (8.8%); "Aging—Periodicals" with 19 (4.8%);" Medicine – Periodicals" with 18 (4.5%); and "Aging – Psychological Aspects—Periodicals" with 14 (3.5%). These five descriptors accounted for 35.0% of the journal citations in the sample. 50.0% of the journal citations came from 13 subject headings. After the first five, the next most frequently assigned headings were: "Psychology – Periodicals" (3.3%); "Social psychology – Periodicals" (2.8%); "Geriatric psychiatry – Periodicals" (1.8%); "Epidemiology—Periodicals" (1.3%); "Gerontology – Periodicals" (1.3%); "Medical Economics – Periodicals"(1.3%). "Older people." "Public health", and "Social work with older people" also constituted 1.3% of the articles. The emphasis on psychology and psychiatry may be the result of having included citations to articles from the

Journals of Gerontology, Series B for this sample, as half of Series B is devoted to psychology-specific articles about aging.

Broadening it out a bit, 69 of the 134 categories (51.0%) fell within the social sciences [See Table 6]. These categories accounted for 206 (51.5%) of the cited articles. 58 of the categories (43.0%) were medical or scientific, accounting for 187 articles (46.8%). Seven categories (5.0%) were business, statistics or humanities topics accounting for 7 articles (1.8%) . Thirteen of the categories (9.7%) had a term or phrase related to aging (gerontology, geriatrics, older people, etcbut these categories represented 158 or 39.5% of all the articles cited

4. Database Coverage

The electronic version of *Ulrich's* was consulted to determine if each citation collected would have been indexed in the following databases: *Abstracts in Social Gerontology, Ageline, PsycInfo, PubMed, Web of Science, Scopus, CINAHL, SocINDEX and Academic Search Premier* [See Table 7]. The indexing information was collected separately for each citation as opposed to each journal; since a database may not cover all the years of a journal, and the goal was to determine if the citation itself would have been covered in the database, rather than simply the journal.

PubMed/Medline indexed the greatest number of articles by far with 94.0% (n=376) of the cited articles included within the database. *Web of Science* indexed 87.8% (n=351) of the cited articles and *Scopus* 80.3% (n=321). *PsycInfo* indexed 70.8% (n=283) of the articles. *Ebsco Academic Search Premier* contained 57.0% (n=228), then *CINAHL* with 56.8% (n=227). The two databases specializing in gerontology issues: *Ageline* 49.8% (n=199) and *Abstracts in Social*

Gerontology 47.8% (n=191) were among those with the lowest coverage of the collected citations. Despite one scholar's claim that *Ageline* is the "definitive source' on aging related issues, *Ageline* contained slightly less than half of the cited references (Tomasulo 2005). *SocINDEX* had the least amount of the content with 46.3% (n=185) cited references. What is most surprising about these findings is that the databases with the strongest medical or "hard science" coverage had better coverage of the social science titles than the databases which have a social science focus.

VI. Discussion

One limitation of this study is the fact that the sample used for analysis did not include materials where the subject descriptor or database indexing could not be obtained. As a result the diversity of sources used for gerontological resources was not accurately reflected in the analysis.

Contrary to Achenbaum and Levin's (1989) assertion that gerontology lacks a discrete locus, the subject scatter of both the journals and the monographs indicates that there is a small, definitive core of materials specific to gerontological research. This core of materials defines the "territorial" function in Winter's conceptualization of an interdisciplinary field (1991). Nonetheless, gerontology as a social science borrows almost equally from the medical research as it does from social science research, and the social science research covers a broad swath of subject categories. This demonstrates the "integrative" function mentioned in Winter's discussion of interdisciplinarity.

Social gerontology so clearly fits the paradigm of an interdisciplinary field that the most effective databases for locating materials are those which cut the broadest swath across disciplines, *PubMed, Web of Science,* and *Scopus*. Since *Ageline* and each only contain about half of the cited references, they should not be exclusively relied up on for gerontological research. Nonetheless, half of the cited references is an amount of enough significance to point to the existence of a small core of gerontology literature. Further study could analyze database indexing in greater detail by performing an overlap analysis to determine the number of unique citations in each database.

Gerhardd states "there is a need for information filters that can be set widely enough open to allow serendipitous discovery" and that electronic resources provide new access to finding things (2000). By looking at the database indexing of these journals, it would appear that broad based databases such as Medline, *Scopus* and Web of Science hold the most promise for scholars seeking serendipitous discovery of social gerontology materials.

It may be understandable that the coverage of the sampled citations in *Ageline* was not as robust as some of the generalized databases, because it has a broad focus which includes many resources geared towards use by the general public as opposed to academic audiences. The low coverage in *Abstracts in Social Gerontology* was thought to be due to the fact that the database only indexes articles as far back as 1990, but only 52 (13%) of the 400 journal articles were published before 1990. While this does account for a portion of the coverage gap it cannot be the only reason for low coverage. One possibility is that the medically-oriented journals still used heavily by social gerontologists are not covered in this social sciences-focused database. It is hoped that this database will become more robust over time, as it is potentially a very powerful

resource for gerontological researchers. With Ebsco's recent purchase of *Ageline* from the American Association of Retired Persons (McEvoy 2009), one wonders what they might have in store with regard to making these two databases complementary or combining them. In any case, it seems that of the databases that are commonly recommended in library web guides for gerontology research, the most general purpose databases contain more complete information.

Based on the information gleaned in this study, the interdisciplinarity of gerontology is determined. But does gerontology constitute a discipline in its own right? To what degree does subject scatter indicate the cohesiveness of an academic discipline? In 1992, Hurd undertook a study of subject scatter of articles by chemistry faculty and found that 59.3% of the articles were published in journals which had an *Ulrich's* subject other than chemistry, and 51.0% of the materials cited in those articles were published in journals which were also not classified as Chemistry in the *Ulrich's* classification schema. Granted her study used a different methodology than this one, but it along with the article about literature studies mentioned in the literature review demonstrates the possibility of a trend towards interdisciplinarity even in those fields that are commonly conceived as well-established academic disciplines (Carpenter 1990). Hurd's commentary was on the interdisciplinarity of Chemistry, but does not question whether or not Chemistry is in and of itself a discipline. How does gerontology compare with these findings? The results from this analysis showed that 26.0% of monographs and 39.5% of journal articles comin form sources with a subject descriptor that has an aging term in it. If one looks at the study of aging, be it from a social or medical perspective, as a distinct discipline or category, this

breakdown could be considered comparable to the diverse array of subjects used in the more established field of Chemistry.

VII. Conclusion

Bibliographers and subject specialists tasked with building a gerontology collection for their libraries face challenges similar to those purchasing for other interdisciplinary fields. These challenges exist regardless of whether the field is or is not considered an academic discipline. To what degree do gerontology subject specialists purchase materials outside of the small core of publications used by gerontology researchers? Clearly there needs to be close to an equal emphasis on medical sources as there is on social sciences sources. Another topic for further research would be to ascertain if (medical) geriatrics publications borrow as much from social science as the gerontology publications borrow from medicine.

What are the implications for budgeting when a discipline's literature overlaps with that of another? Consideration of dependence/independence from the parent discipline, the number of related disciplines, and the degree of establishment of the interdisciplinary area all need to be taken into account. (Dobson, et.al. 1996). One scholar states that interdisciplinary funds, rather than subject specific budget lines might be better used (Carpenter 1990). However, given that social gerontology does have its own unique core of subject headings and journal titles; it may be useful to have both an interdisciplinary fund and small fund that only covers the core materials. Nonetheless, as one scholar notes: "The contemporary bibliographer is both a specialist and an inveterate transgressor of specialization" (Ryan 1994, 107-108). Information from a

bibliographic analysis should be combined with knowledge about the gerontology program which the collection is serving, including its focus, research specialties, and teaching emphasis.

Clearly there is a nascent "territory" of unique gerontology literature likely to grow as time goes on. It is highly likely, therefore, that gerontology is on its way to becoming a discrete discipline, if it has not already become one. However, selectors for gerontology collections still need to pay attention to a broad array of resources in various social sciences as well as the field of medicine to create a robust collection for their institutions.

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