



*Article*

**Alignment of Citation Behaviors of Philosophy Graduate Students and Faculty**

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**Abstract**

**Objective** – This study analyzes sources cited by graduate students in philosophy at the University of Colorado Boulder (UCB) in 55 PhD dissertations and master’s theses submitted between 2005 and 2010, to discover their language, age, format, discipline, whether or not they were held by the library, and how they were acquired. Results were compared to data previously collected about sources cited by philosophy faculty at UCB, in books published between 2004 and 2009, to identify how closely citation behaviors aligned between the two groups.

**Methods** – Citations were counted in the PhD dissertations and master’s theses. Citations to monographs were searched against the local catalog to determine ownership and call number. Comparison numbers for faculty research were collected from a previous study. Results were grouped according to academic rank and analyzed by format, language, age, call number, ownership, and method of purchase.

**Results** – Graduate students cited mostly books, though fewer than commonly found in other studies. Citations were almost entirely of English language sources. Master’s students cited slightly newer materials than doctoral students, who in turn cited newer materials than faculty. The library owned most cited books, and most of those were purchased on an approval plan. Doctoral students most frequently cited resources outside the discipline of philosophy, in contrast to master’s students and faculty.

**Conclusions** – The citation behavior of graduate students in philosophy largely, but not entirely, mirrors that of the faculty. Further study of citation behavior in humanities disciplines would be useful. Understanding the behavior of philosophers can help philosophy librarians make informed choices about how to spend library funds.

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## **Introduction**

Librarians have long had an interest in better understanding how scholars use library resources. Improved understanding of resource use can help librarians make more efficient and effective use of limited acquisitions budgets. This understanding can be somewhat elusive, and has been approached in many different ways. This particular study attempts to take a user-perspective model of looking at resource use employing a citation analysis. Rather than looking at an existing library collection and asking how much it gets used, this study looks instead at resources cited by graduate students at the University of Colorado at Boulder (UCB), and whether or not the library owns them. A similar study of faculty research at the same institution turned up some interesting findings, and it became relevant to question whether or not graduate student research behavior matched that of the faculty (Kellsey & Knieval, 2012). Most citation analyses, for various reasons, focus primarily or exclusively on science disciplines, but there is limited analysis in the literature of humanities fields.

## **Objectives**

This study looks specifically at graduate theses and dissertations in the field of philosophy to assess the extent to which the library collection holds the materials cited by philosophy graduate students, as well as whether or not philosophy graduate student research behaviors mirror those of philosophy faculty.

The author expected to find that graduate students in philosophy, as newer entrants to the field, would use newer materials than the faculty. Since graduate students request

purchase of materials from their librarian less frequently than faculty, the author expected more of the owned titles to be purchased on approval rather than firm orders (this process is further explained below). The author expected a high percentage of the cited materials to be classed within the discipline of philosophy, rather than interdisciplinary. Finally, the author expected the breakdown of the percentage of monographs and journals cited, as well as the amount of non-English material used, to roughly match those of the faculty.

Since most citation analyses are of scientific fields, this study can help inform collection development decisions in humanities fields, including whether or not to target older materials and foreign languages for weeding, whether to focus on disciplinary content and monographs for collection of new materials, and whether or not approval plans for collection building effectively match materials used by scholars.

## **Literature Review**

A robust conversation already exists in the literature about the strengths and weaknesses of citation analysis (see, for example, Burright, Hahn, & Antonisse, 2005; Hellqvist, 2010; MacRoberts & MacRoberts, 2010; McCain & Bobick, 1981; Waugh & Ruppel, 2004; Smith, 2003; Sylvia, 1998; Vallmitjana & Sabate, 2008; Zipp, 1996). Beile, Boote, and Killingsworth (2004), among others, make persuasive arguments against using citation analysis to develop core title lists for monographs or journals, or as a method of measuring research quality. This study, however, makes use of citation analysis for a different purpose for which the method is more effective, by

employing citations as a measurement of the resources local scholars needed, and whether or not the library owns those sources.

Existing literature in citation analysis (e.g., Iivonen, Nygren, Valtari, & Heikkilä, 2009), focuses heavily on journal citations and on the sciences. Few analyze the humanities, and even fewer specifically analyze philosophy. John East and John Cullars investigate philosophy specifically. Cullars (1998) found 15% of citations in philosophy materials were to foreign language resources. He also found that a large majority of citations (85%) were to books, and that a quarter of the cited sources were classed outside the area of philosophy. He concluded that older materials were likely to be considered “recent” in philosophy, including consistent use of materials up to nearly 40 years old. Bandyopahyay (1999) also found that philosophy authors cited mostly books, but studies by Kellsey and Knievel, (2012; 2005) found that philosophy scholars tended to cite far more journals than other humanists, and that most citations were to English language materials (Kellsey & Knievel, 2004). A study by East (2003) also found almost no citations to non-English books in a year’s worth of citations in two philosophy journals from 2002. A recent study of graduate students included philosophy (Kayongo & Helm, 2012), and also found that the philosophy students cited newer books and more journals than other humanists.

Various authors discuss the importance of evaluating the work of graduate students as a measurement of the usefulness of a library collection (Edwards, 1999; Kushkowski, Parsons, & Wiese, 2003; Washington-Hoagland & Clougherty, 2002). Thomas (2000) emphasizes the value of looking at local use and local scholars. Zipp (1996) and McCain & Bobick (1981) both found that graduate student resource use mirrors faculty usage. Both studies, however, focus on science disciplines, and measure similarity of research based on lists of cited journals. Neither study intended to evaluate whether graduate student research

mirrors faculty research in the humanities, nor did they look at language, format, or interdisciplinarity of citations. Some studies have found that graduate students tend to cite newer materials than faculty (Kushkowski et al., 2003; Larivière, Sugimoto, & Bergeron, 2013; Zainab & Goi, 1997).

Some studies call for more research into humanities sources (Sherriff, 2010; Smyth, 2011), since data collected and presented in these fields can help to influence collection development policy in libraries. A few interdisciplinary citation studies included some humanities (most notably Broadus, 1989; Buchanan & Herubel, 1994; Kayongo & Helm, 2012; Leiding, 2005; Smith, 2003; Wiberley & Jones, 1994; Wiberley & Jones, 2000; Wiberley, 2003). In general, these studies found that humanists tended to cite more, and older, monographs than scientists and social scientists. Smith (2003) found that ownership of monographs was going down over time in the humanities. Wiberley (2002; 2003) found that most humanists tended to cite materials within their own discipline, though he did not evaluate philosophy in his studies.

This study attempts to address the question of similarity of graduate student behavior to that of faculty in a humanities discipline. It also attempts to investigate an apparent contradiction of existing studies regarding the dominance of monographs, as well as the use of foreign languages, in the research of philosophy scholars. The results of this study can inform the collection development choices of humanities librarians.

## **Method**

This study used a citation analysis approach. The author analyzed all of the dissertations and theses submitted for the Department of Philosophy at the University of Colorado Boulder (UCB) between 2005 and 2010. In that time period, there were 26 doctoral dissertations and 29 master’s theses, for a total of 55 source works. The results were compared with 9 faculty

books published between 2004 and 2009 by philosophy faculty at the same institution.

Most citation analyses are conducted using tools such as Web of Science. However, in the case of humanities disciplines like philosophy, which are comparatively poorly covered in such tools, most citation analyses have to be hand-counted. As is true of such citation analyses, it was necessary to make several choices about how to categorize citations for the purposes of the study. These decisions were made based on the study goals and characteristics of the resources.

For this study, the author followed the same process used in a 2012 study by Kellsey and Knievel that analyzed citations in books published by philosophy faculty at UCB during roughly the same time frame, in order to provide comparative results. The 2012 study also provided comparison data for faculty behaviors. Each citation was evaluated to determine if it cited a book or a journal, and whether or not the work cited was in English or not in English. Works in translation were counted in the language into which they were translated; thus, a citation to an English translation of a French philosophical text was tallied as English, since that was the language of the material actually used. Chapters or articles in compiled volumes were counted as books, and counted in the language of the cited chapter or article, not the language of the volume. Books with multiple citations in one bibliography (to multiple chapters, for example) were counted only once, since that measures availability, the focus of this study, rather than intensity of use. Proceedings were counted as books or journals depending upon how they were published; most were published as books. Newspaper articles and encyclopedia entries were counted as articles. As with the study this method emulates, law cases, dissertations, archival materials, unpublished proceedings, and other unpublished works were not counted, since unpublished materials did not provide useful analysis of overlap with the locally held collection. The University of

Colorado Boulder (UCB) is a United States regional and federal depository, as well as a United Nations depository, which means that the library automatically receives copies of all documents published by government agencies. Hence it can be generally assumed that UCB owns all government documents except in unusual cases of missing or lost materials. Thus determining whether or not the library owned cited government documents did not provide the enlightenment this study sought, and government documents were not counted.

Many libraries work with book vendors to set up profiles of materials that the library automatically purchases. These arrangements are called approval plans, and have become commonly used in large libraries throughout the United States. This study attempted to determine whether the cited materials were purchased this way, or if they were purchased through firm orders, meaning that a librarian specifically requested a title that was not delivered via the approval plan. Firm orders might be the result of specific requests by library patrons, or may simply be the result of librarians noticing a title missing from the approval plan that might be useful.

Once each qualifying citation was identified, the books were checked against the local library catalog to determine: 1. if the book is owned by the library, 2. the call number (UCB uses Library of Congress classification for call numbers), 3. the publication date, and 4. whether it was ordered directly or via approval. In philosophy, as with many other humanities disciplines, different editions or translations are considered different works by scholars in the field. Thus, only the exact edition cited was considered a match; if the library owned the same title in a different edition it was not marked as a title owned. Many records, especially for titles older than about 15 years, did not indicate the method of purchase, so it could not be determined if the items were purchased directly or via an approval plan.

**Results**

The total number of citations counted was 3,910 in 55 dissertations and theses from UCB, 3,000 of which were in the 26 PhD dissertations, with the remaining 910 in the 29 master’s theses. The resulting data were grouped by graduate level to facilitate more meaningful interpretation, and were analyzed in comparison with each other, in the aggregate, and to faculty research. The faculty data for comparison were drawn from 9 faculty books from the same department, which held a total of 2,560 citations.

The average of 71 citations per dissertation is slightly higher than the 59 citations per dissertation found by Zainab and Goi (1997). Average citations per document diverged widely when looked at by student level, with 115 citations per PhD dissertation when dissertations are considered alone, and only 31 citations per master’s thesis when looked at alone. Both are considerably lower than the average of 284 citations per book by philosophy faculty in the previous study.

**Language and Format**

Among dissertations and theses, 36% of the citations were of journal articles, while 42% percent of the citations in faculty books were of journal articles (see Figure 1). An independent samples t-test revealed a statistically significant difference between these groups. Citations in faculty books were more likely to cite journal articles than those in dissertations and theses ( $t(8.7)=-5.0, p=.001$ ). Foreign language citations made up 0.7% of the total citations in the theses and dissertations, and 4.3% of the total citations in faculty books. There was no statistically significant difference between the two groups in the amount of foreign language they cited.

**Ownership**

The UCB library owned 83% of the books cited by graduate students, compared to the 81% of books cited by faculty (see Table 1). Though these numbers are very close, there is a statistically significant difference in ownership of materials cited by graduates and faculty ( $t(62)=-5.5, p<.01$ ).

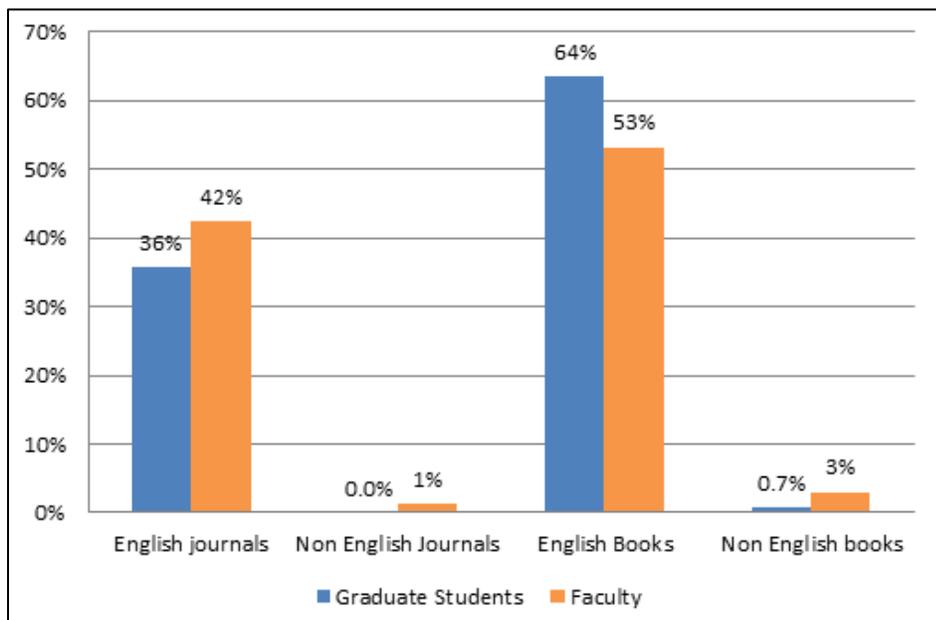


Figure 1  
Language and format of cited works

Table 1  
Ownership of Cited Works

Type	Owned	Not Owned
<b>Graduate Students</b>	83%	17%
<b>Faculty</b>	81%	19%

### *Purchase Method*

Information about how materials were purchased was not collected by the existing system until 1995. As a result, only materials purchased after that time, regardless of their publication date, included information about whether they were purchased on an approval plan or as firm orders. Of the materials cited by graduate students and owned by the library, 43% (897) included purchase information. Of the materials for which purchase information was available, 82% were purchased on approval (see Table 2). Of the materials cited by faculty and owned by the library, a higher percentage, 84%, were ordered on approval. Like the results of the owned/not owned data, though these figures are close to those of the previous study of faculty sources in philosophy, there is a statistical significance to the higher number of cited materials that were acquired via firm order for the graduate students ( $t(62)=-2.8, p=.01$ ).

Table 2  
Purchase Method of Cited Works

Type	Approval	Firm Order
<b>Graduate Students</b>	82%	18%
<b>Faculty</b>	84%	16%

### *Age*

The age distribution of citations in theses alone shows highest usage of very new materials (5

years old or less), with a steady decline as materials age (see Figure 2). Even materials older than 26 years, when grouped together as a whole, proved fewer than the newest materials in master's theses.

This distribution of age of citations is in contrast with the PhD dissertations, in which the largest age group of materials cited is the 26+ year range. Looking at 5 year increments up to 25, the largest age group for PhD dissertations is the 6-10 year range. Additionally, the dissertations cited a higher percentage of materials in all of the older ranges as well, showing a general adoption and use of older materials in dissertations than in theses (see Table 3). Faculty research follows this same pattern, using materials even older than those used for the dissertations (see Figure 3). Faculty publications show a much more pronounced jump in the 26+ age range, but are similar to the PhD dissertations in that the largest 5 year span is the 6-10 year range (see Table 4).

Consistent with that observation is the difference in average publication date of cited materials, which was newer for theses than for dissertations, which in turn were newer than faculty materials (see Table 5).

### *Interdisciplinarity*

In order to assess the interdisciplinarity of cited sources in the philosophy theses and dissertations, the Library of Congress call numbers were recorded for each cited book owned by the library, and then counted in groups. Anything in the Library of Congress Classification System (LCCS) "B," which includes philosophy and religion, was considered "in discipline." Everything else was considered "out of discipline."

Of the owned books cited in the PhD dissertations alone, a minority, only 42%, classified as in discipline while 58% classified as

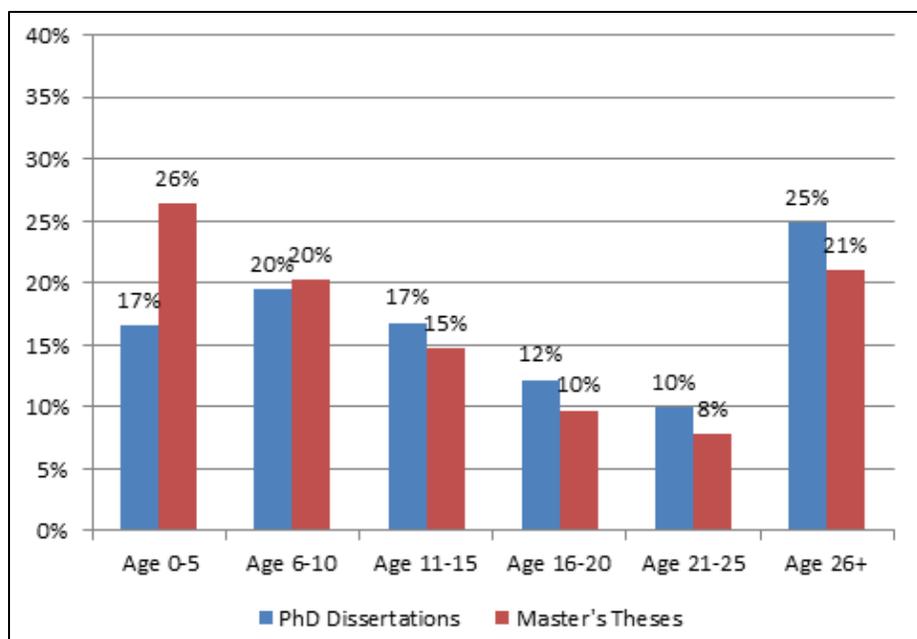


Figure 2  
Age of works cited by graduate students

Table 3  
Statistical Tests: Age of Works Cited by Graduate Students

Age of Materials	Master's Theses	PhD Dissertations	<i>t</i> -value	<i>p</i> -value
0-5 years	26%	17%	$t(39)=-3$	$p<.01$
6-10 years	20%	20%	$t(32.3)=-5$	$p<.01$
11-15 years	15%	17%	$t(30.7)=-4.8$	$p<.01$
16-20 years	10%	12%	$t(32.3)=-4.6$	$p<.01$
21-25 years	8%	10%	$t(29.8)=-5$	$p<.01$
26+ years	21%	25%	$t(26.6)=-3.4$	$p<.01$

out of discipline. In the master's theses, that breakdown was reversed, with 56% of citations in discipline (see Figure 4). PhD dissertation writers were more likely to cite materials published outside of the discipline than master's thesis writers ( $t(33.8)=-4$ ,  $p<.01$ ).

A more detailed breakdown of the call numbers of cited works shows that the majority of out of discipline citations for both theses and

dissertations is in the social science range (LCCS areas G-K). After social science, the next largest discipline cited was science (Q-V), though only a third as many citations were in this area. Even so, science alone represented more than literature (P) and history (C-F) combined, with arts and education (L-N) and reference (A and Z) almost completely absent (see Figure 5). This particular finding was dissimilar from research done with faculty citations, which

found a significantly higher percentage of faculty citations within the discipline (see Figure 6;  $t(8.5)=-4, p<.01$ ).

**Discussion**

*Language and Format*

Of the few existing analyses of citations in humanities dissertations and theses, most ask

whether scholars cited more books or journals. Most other studies found a higher percentage of citations to monographs. However, inconsistent counting methods make these numbers difficult to compare, since some other studies counted duplicate citations more than once, or included government documents as books, while this study did not. In this study, though citations to monographs represent a majority among both groups, this percentage is considerably lower

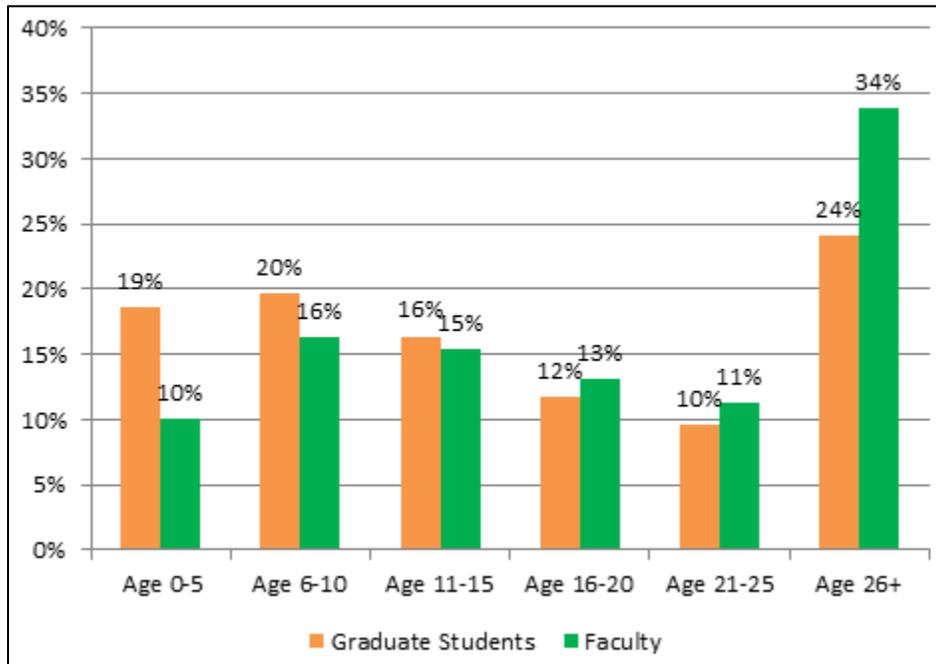


Figure 3  
Age of works cited

Table 4  
Statistical Tests: Age of Works Cited by Graduate students and Faculty

Age of Materials	Graduate Students	Faculty Books	t-value	p-value
0-5 years	19%	10%	$t(62)=-2.1$	$p=.04$
6-10 years	20%	16%	$t(62)=-4.6$	$p<.01$
11-15 years	16%	15%	$t(62)=-4.9$	$p<.01$
16-20 years	12%	13%	$t(62)=-5.8$	$p<.01$
21-25 years	10%	11%	$t(8.6)=-3.5$	$p=.01$
26+ years	24%	34%	$t(8.6)=-3.4$	$p=.01$

Table 5  
Average Publication Date of Cited Works

Type	Average Pub Date
Master's Theses	1991
PhD Dissertations	1988
Faculty Books	1984

than is typically seen in other humanities studies or in older studies of philosophy (Cullars, 1998). This higher percentage of citations to journals is consistent with more recent studies of philosophy, and may reflect a transition of the discipline toward being a more journal-reliant field than it once was (Kellsey & Knieval, 2012; 2005). This may have an influence on how philosophy librarians distribute their funding for materials, since it may be prudent to devote more attention to serials in order to match available resources with resource use.

A particularly unusual result of this study is the near absence of any foreign language citations, which made up less than 1% of the total citations. This number is much lower than some studies have shown (Cullars, 1998), and yet is more consistent with some other recent studies that have shown low usage of foreign language materials by philosophy scholars (East, 2003; Kellsey & Knieval, 2012; Kellsey & Knieval, 2004). The philosophy degree at UCB has only a provisional language requirement, in which language study is required on a case-by-case basis, if the student's topic of interest necessitates it. This, combined with the availability of translated material for study, may have an influence on the very low usage of non-English material. In addition, there is a local emphasis on applied ethics, which is a niche of philosophy that tends to eschew continental philosophical approaches where foreign language might play a larger role (Cullars, 1998).

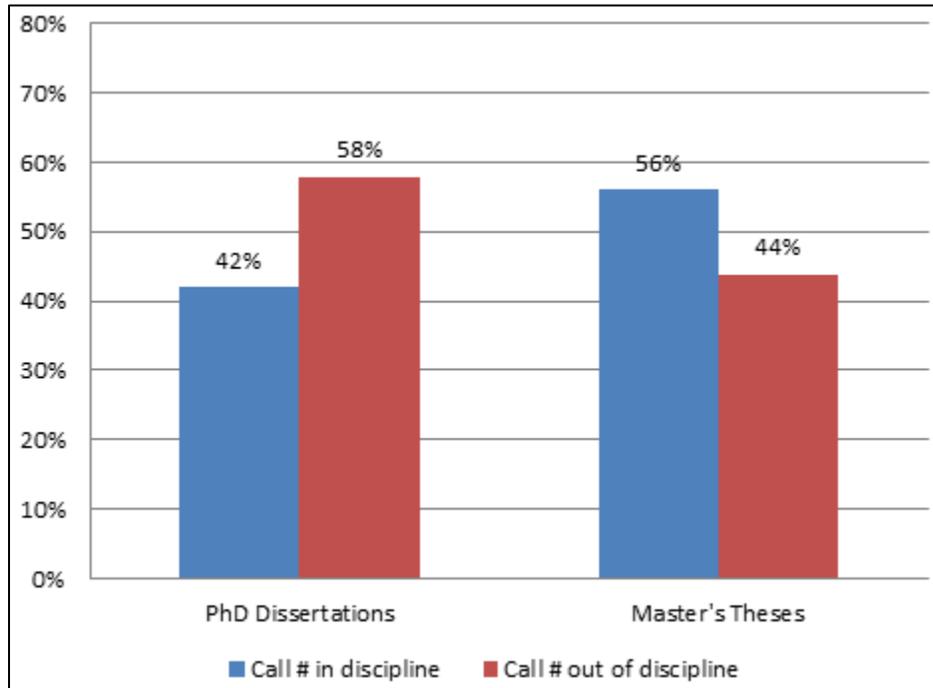


Figure 4  
Interdisciplinarity of works cited by graduate students

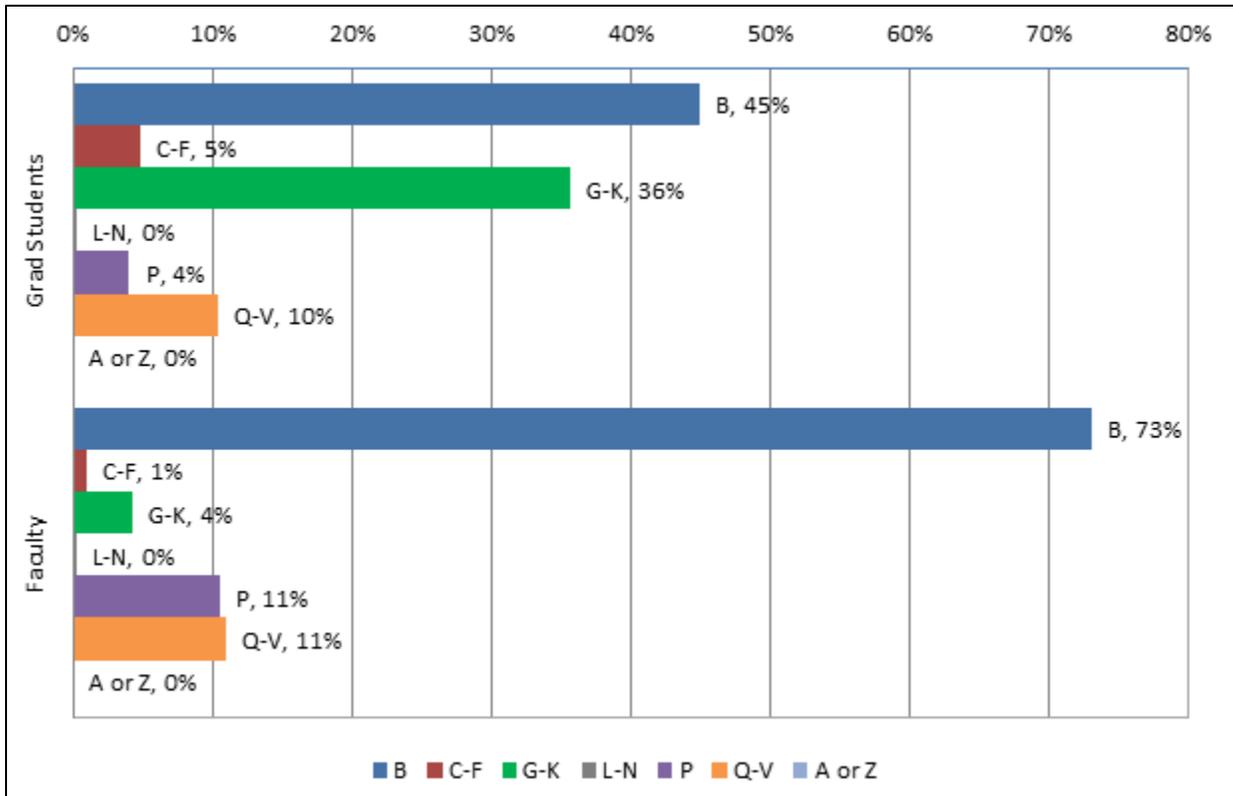


Figure 5  
Cited discipline by call number classification

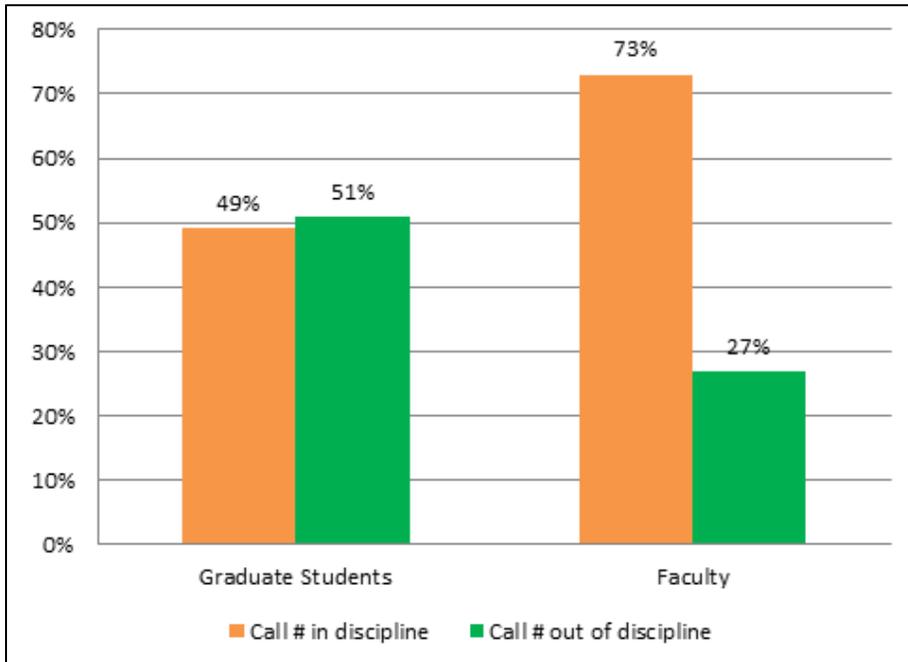


Figure 6  
Interdisciplinarity of cited works

The language and format distribution of the materials cited by graduate students mirrors very closely those cited by faculty. This finding supports Zipp's (1996) analysis that graduate student research is reflective of faculty research, but other significant factors discussed below need to be assessed to determine whether graduate student citation behavior really does align with faculty behavior in the humanities.

### *Ownership*

Between 81 and 83% of cited monographs were owned locally. This number can be interpreted in various ways; 83% is very high, and clearly the library is collecting a large majority of the sources used by students. At the same time, this is an indication that nearly 1 in every 5 sources are being obtained by the students or faculty through interlibrary loan (ILL) or some other mechanism, which, from the user perspective, may feel like a burden. The not-owned material may be partly explained by the number of sources cited from outside the field of philosophy, which will be further addressed below. Another explanation may be a local practice of not purchasing volumes of collected articles that have been previously published elsewhere; students may not be finding the previously published versions that are in alternative locations, and instead are acquiring the volumes of collected articles. It is worth reiterating here that only exact editions were considered a match. Many of the not-owned materials were held in different editions. These findings may indicate a need to purchase more duplicative material, such as the collected works, since there is reason to suspect that students and faculty are still using the collected works but attaining them through borrowing or other means. The ownership percentages are much higher than the un-weighted owned percentage of 63% of cited humanities materials in a similar study by Kayongo & Helm (2012). It is hard to establish a bench-mark of what percentage of cited materials should be owned by the local library. As a result of budget pressures, many libraries are moving away from

the "just-in-case" philosophy of collection development, which would logically drive down the percentage of cited materials that are already owned.

### *Purchase Method*

Since PhD dissertation topics tend to be narrow and relatively unexplored, it is logical that the library approval plan would not necessarily reflect the newer topics, so 82% seems like a reasonable percentage of titles to be ordered on approval. The faculty are more established scholars, and tend to remain at the institution for longer periods than the students. Thus it is easier to establish approval profiles to provide a higher percentage of the materials of interest to the faculty. Also, since more of the materials cited by faculty fall into the philosophy classification (see below), it is easier for a subject librarian to ensure coverage in the collection of topics of interest to the philosophy scholars.

### *Age*

Of the three groups, master's theses cited the newest materials, PhD dissertations cited slightly older materials, and faculty books cited the oldest materials of the three. This is consistent with other studies that have shown that graduate students use newer sources than faculty, and may be a result of the fact that graduate students, by their nature, are performing comprehensive literature reviews for their projects, while faculty are building on a more mature research agenda and may be less aggressive in identifying new related literature. The results of this study are consistent with other humanities studies in showing that humanists use older materials than scientists or social scientists. Librarians should take into account these differences of field of study before making choices about materials to target for weeding projects, or assuming that humanities materials lose their value as a direct function of their age, as may be more true in scientific disciplines.

### **Interdisciplinarity**

Surprisingly, faculty authors were the most strict adherents to their own disciplinary material of all the groups studied. PhD dissertations demonstrated the weakest tie to disciplinary material, as this was the only group for whom fewer than half of the cited sources were classified in philosophy. In this way, graduate students and faculty show more divergence in the materials they choose to cite in their research. If this citation pattern were to continue as these graduate students become members of philosophy faculties, this could have an influence on how librarians want to define their collections. In order to address the current need of graduate students, as well as the potential future needs of faculty, librarians should also be reaching across traditional disciplinary definitions to ensure that the library is collecting relevant materials in disciplines related to philosophy. In this study, those relationships are in areas not traditionally associated with philosophy: the social sciences and the sciences, rather than the other humanities. Thus it may be useful for philosophy librarians to build new understandings with other librarians to ensure sufficient breadth of coverage in a library collection.

### **Conclusion**

This study took a user-perspective approach to analyzing resource use by philosophy scholars. Building on the earlier study of faculty research behaviors, this study analyzed citations in philosophy master's theses and PhD dissertations from the University of Colorado Boulder for their format (monograph or journal), language (English or other), age, presence in the local library, method of acquisition (approval or firm order), and subject classification.

This study found that in most ways except interdisciplinarity, graduate student research mirrored faculty research. In contrast to some earlier studies, this study found almost no use of

foreign language sources by philosophy scholars. Generally, the percentage of cited sources owned by the library was high, over three-quarters, and of the sources with purchasing information, more than three quarters had been purchased on approval plans. The majority of citations were to monographs, with PhD dissertations citing roughly two thirds monographs, and master's theses slightly less. Master's theses cited somewhat newer materials than PhD dissertations, which in turn cited newer materials than faculty publications analyzed in a previous study. The most notable separation between faculty and graduate student research behaviors was that graduate student research cited a much higher percentage of materials classed outside of philosophy than faculty research did.

Further similar studies of both faculty and graduate students in other humanities disciplines would be of interest to assess whether the results found in this study reflect an average result or an outlier.

Results of this study can help to develop the picture of how humanities scholars use library resources. It can be useful for humanities librarians as they evaluate their collection development policies and practices related to journals, foreign language, and approval plans, as well as provide some data to help determine policies and practices related to age and language for weeding of materials.

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