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Use of Full-Text Electronic Resources by Philosophy Students at UNC-Chapel Hill: A Citation Analysis

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Abstract
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USE OF FULL-TEXT ELECTRONIC RESOURCES BY PHILOSOPHY STUDENTS AT UNC-CHAPEL HILL: A CITATION ANALYSIS

by
Nicholas Okrent

A Master's paper submitted to the faculty
of the School of Information and Library Science
of the University of North Carolina at Chapel Hill
in partial fulfillment of the requirements
for the degree of Master of Science in
Library Science.

Chapel Hill, North Carolina

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Approved by

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Advisor

Introduction

In these times of revolution in information technologies, it takes little courage to suggest that full-text electronic resources will become progressively more common and accessible. Common sense suggests that as these resources become more available and convenient to use, they will be ever more important sources of information for students doing research. Indeed, anecdotal evidence from the University of North Carolina at Chapel Hill suggests just this scenario. In addition to the library's large stock of electronic full-text databases, which it has had for some time, new tools—providing electronic access to several hundred thousand monographs, poems and articles—have been made available through Spring 2001. Over the same period of time, librarians at UNC-Chapel Hill have noticed that undergraduates are becoming more reliant on full-text resources. This scenario, which word of mouth suggests is repeated in libraries around the country, indicates that librarians will need to determine how best to respond to the growing importance of electronic full-text resources.

In responding to full text technologies, there is a danger that amid the astonishing new possibilities, librarians will focus on purchasing and using full-text electronic resources without taking full account of the diverse needs of different disciplines and levels of research. Different sorts of research demand different resources and types of library support. Students in the humanities tend to rely more heavily on monographs and anthologies than do students in the social and natural sciences. They also tend to use older materials. Because monographs, anthologies and older materials are still relatively inaccessible in full-text electronic format, it must be asked whether this format is less useful for students in the humanities.

To decide how the needs of particular populations of students can best be met, it is necessary to gather empirical data about what sorts of resources are actually capable of meeting them. This study focuses on students doing high-level research in philosophy at UNC-Chapel Hill and aims to determine the degree to which their needs could be met by electronic full-text resources. The results of this study can be used to help determine how libraries can best meet the needs of students doing high-level research in philosophy. Because disciplines in the humanities share important characteristics such as reliance on monographs and older materials, its implications may bear upon resource selection in other disciplines as well.

Literature Review

The goal of this paper is to determine how important full-text electronic resources are to the high-level research activities of philosophy students and, by extension, to the high-level research activities of humanities students in other disciplines. Given the great importance of this issue, it is striking how little research has been done to address it explicitly. This is probably the case for two reasons: the novelty of electronic resources that provide full-text access to scholarly materials and the relative unimportance of new technologies to the humanities.

Although little research has been done on how frequently electronic resources are used in the humanities, much has been written about related topics. For example, there has been much speculation about how the World Wide Web in general might be of use to humanists. Further, some work has been done on how collection developers have reacted to the advent of electronic resources directed to humanist students and scholars.

Likewise, there has been a great deal written about the characteristics of humanistic research. Research in all of these fields is useful to review for the background they provide. Finally, several citation analyses of philosophical works will be reviewed. None of the citation analyses to be reviewed directly apply to electronic resources, but they are useful to review because they provide a great deal of information about the research techniques of philosophers and suggest a methodology that might be particularly useful for answering the research question.

Electronic Resources and Collection Development

Alan Liu (1998) and Byron Anderson (1998) both address the question of what role the World Wide Web might play in the humanities. Liu, creator of the humanities mega-site *Voice of the Shuttle*, provides an essay about why and how he created the site. The site seems to be an answer to the rather abstract questions 'what is the global role of the internet?' and 'how can a site of this sort fit into both the worlds of academic and corporate America?' This discussion provides little analysis but does describe the web site. *Voice of the Shuttle* is quite popular, receiving between 800 and 1000 unique visiting machines per weekday during the academic year (Liu, 1998). Anderson's analysis (1998) of the Internet discusses some of the problems associated with the web that inhibits its utility to humanists. These problems include the inability to find desired information, lack of useful information, unorganized nature of the information, and lengthy time to learn to use and fruitfully search. As with Liu's paper, Anderson's is not really research oriented, and it is not based on nor does it provide empirical data of any

sort. What it does do is suggest characteristics that any resource must have to be useful to a humanities scholar.

Collection developers, who must decide how to prioritize these new and expensive sources of information, have paid some attention to full-text electronic resources. To determine how collection developers have reacted to the proliferation of electronic resources, Thompson and Wilder (2000) conducted an informal survey of 32 collection developers. A number of interesting results were derived from the survey. An average of 8.83 bundled aggregates (such as ProQuest and JSTOR) were subscribed to by the libraries of the responding librarians. Most of the libraries did not receive new funds to subscribe to databases, and so seemed to have lost purchasing power in other areas such as serials purchasing. Thompson and Wilder suggest that libraries are moving from an ownership model to an access model of collection development.

These results suggest that collection developers do tend to consider full-text resources to be important. However, the survey, which was informally sent over several listservs, probably did not give reliable results. There is no way of knowing exactly who replied, and only a few institutions of each size range was represented. For example, only five responses were received from employees of libraries at universities with between five and ten thousand students, too few upon which to base any important conclusions.

The research habits of humanities scholars

The typical characteristics of humanities scholars' have long been agreed upon. The literature reviews of Stone (1982), Watson-Boone (1994) and Benaud and Bordeianu

(1995) all agree that humanities scholars have the following characteristics: they tend to work in isolation rather than in groups, they tend to use documents (i.e., physical objects) rather than information, their primary unit for both producing and using information is the monograph, they are much more reliant on older materials than scholars outside of the humanities, and they tend to rely on browsing and serendipity. All of these characteristics make new technologies--which tend to be most useful for information of journal article length or shorter, tend to focus on materials produced after 1990, and inhibit browsing--less useful to humanities scholars. These three articles present commonly accepted ideas about how humanities students and scholars do research.

There are a number of ways to determine how humanities scholars actually do research and how well it matches the traditional view. One is the case study. The traditional account is generally affirmed by both Weintraub (1980) and Curley (1989), who describe their own experiences doing research. These accounts, while useful because of the 'inside information' provided, are of course no more than suggestive, being based as they are on particular accounts of self-perceived behaviors.

Sievert and Sievert's survey (1989) of twenty-seven philosophers has a firmer ground on which to derive conclusions. The results generally confirm the traditional view of humanities research. However, about half of the philosophers surveyed thought books and journals were equally important. Moreover, anthologies were identified as being of particular importance to philosophy scholars, a point not noticed previously.

While these studies tend to affirm the traditional conception of humanities research and therefore suggest that new technologies may be of marginal significance, they do not explicitly consider new technologies. Wiberley and Jones' study (1994,

2000) of technology use by eleven humanities scholars does focus on this issue and reveals change over time. Wiberley and Jones (1994) affirms the traditional conception of humanities research and further asserts that humanists tend to have little interest in computer technologies aside from word processing, searching OPACs and using electronic mail.

Wiberley and Jones (2000), on the other hand, find that the same scholars who had little use for electronic resources six years earlier were becoming more adept at using them over time. They found that a major reason for delay in learning new technologies was that humanists have strict time limitations and rely heavily on content. Electronic resources become valuable only when the content thereby made accessible is of more importance than the time required to use new technologies. These studies suggest that there is a time lag in humanities scholars' use of new technologies, and that they may make more use of them as more content becomes available.

The seeming unanimity of agreement about the characteristics of humanities scholars' strongly suggests that it is likely to be correct. However, none of the studies mentioned above provide very solid evidence. The results of case studies and surveys with small numbers of participants are not readily generalizable. Moreover, there have been some challenges to the traditional view of research in philosophy. As Cullars (1998) notes, scholars who practice analytic philosophy consider themselves to be in some ways more akin to scientists than other sorts of humanists. This point, though based on a very limited review of philosophical literature, raises an important issue. If many philosophers do in fact share research characteristics with scientists—reliance on

articles, current materials and collaboration for instance—then they might have greater use for electronic resources than would otherwise be thought.

Citation Analyses

Fortunately, a number of citation analyses of works in philosophy have been done that provide concrete data regarding many of the research characteristics of philosophers (Herubel, 1991; Buchanan and Herubel, 1993; Magrill and St. Clair 1989, 1990; Cullars, 1998). These citation analyses demonstrate that philosophers' self-perception of their intellectual activity may not be indicative of their research techniques; philosophers share the characteristics of humanities scholars mentioned earlier. Cullars' citation analysis of monographs, Buchanan and Herubel's citation analysis of dissertations, and Magrill and St. Clair's citation analysis of undergraduate papers all find that around 70-80% of the citations are to monographs and about 50% of the cited materials are over twenty years old.

Different techniques may be used to perform citation analyses (Smith, 1981). The simplest technique is the citation count, in which the researcher determines how many citations from a set of documents are given or received from another set of documents. There are two main sources of data that could be used: bibliographies and notes (foot, end and text). Most citation analyses (Herubel, 1991; Buchanan and Herubel, 1993; Magrill and St. Clair, 1989, 1990) rely on bibliographies for data. Relying on bibliographies is convenient because the data is localized to one precise area and it is easy to count the limited number of statistics.

The problem with relying on bibliographies is that they provide one citation for each source regardless of how much the sources were actually used. A book that was referred to once and a book that was referred to a hundred times get the same amount of attention in the bibliography. Consequently, a citation analysis that relies solely on bibliographies will grossly underestimate the importance of frequently used texts. For this reason it is difficult or impossible to get a true sense of the importance of works of different formats or ages when relying on bibliographies. A citation analysis that relies on notes (for an example see Cullars, 1998) largely avoids this problem, but is more labor intensive.

Another important issue to consider when designing citation analyses is the desired generalizability of the results. Cullars (1998) makes his results generalizable to philosophy monographs by randomly selecting 539 references from 183 philosophy monographs from which at least one citation was chosen. Magrill and St. Clair (1989, 1990) attempt to derive results that are generalizable to undergraduate philosophy papers by considering philosophy papers from four universities of different sizes and purposes. However, no papers from academically prestigious institutions were considered, and this limits the generalizability. Buchanan (1993) takes data solely from philosophy dissertations at Purdue, and consequently the results are not very generalizable—they may well reflect characteristics particular to Purdue's department or student body. Since Buchanan's study is intended for use at Purdue however, this lack of generalizability does not concern her.

Citation analyses such as the ones discussed here are extremely useful for the empirical results they provide. From these examples we can see that a properly focused

citation analysis would provide insight into the use of full-text electronic resources by philosophy students and scholars at various research levels at UNC-Chapel Hill. Such a citation analysis could rely solely on papers produced at this university but would need to represent different levels of research. As opposed to the studies reviewed, a citation analysis suited for our purposes would need to compare the results of the citation analysis to UNC-Chapel Hill's total collection of full-text resources. In this way, a clear picture of how useful the electronic resources could be would emerge. Furthermore, to be as exact as possible it would be useful to do a citation analysis based on references rather than bibliographies.

Methodology

One measure of importance is frequency of use. To determine how important full-text electronic resources are to high-level research of undergraduate and graduate students in philosophy, we can look at how frequently a specified group could use them. One simple way of doing so is to use the following two-step process. In the first step, a citation analysis of research papers by undergraduate and graduate students in philosophy is performed to determine relevant characteristics of source materials. For our purposes, relevant characteristics include format (monograph, journal, anthology, etc.), title and year of publication. The citation analysis will provide a complete list of important characteristics of citations provided by the analyzed papers. In the second step, the results of the citation analysis are compared with a list of journals and monographs that are available in full-text electronic format from UNC-Chapel Hill. By comparing the results of the citation analysis with the list of resources available in electronic format, it

will be possible to determine what percent of the resources used were available in electronic format. It is not important whether the electronic versions were actually used or not because we are here concerned only with whether the resources *could* have been used. Another area of concern that is not addressed here is whether humanists prefer traditional paper versions of materials to electronic versions.

Citation Analysis

The subject of study being high-level research in philosophy, a likely source of papers to analyze is honors theses of undergraduates and masters theses and dissertations by graduates, all of which are available from libraries at UNC-Chapel Hill. The method of citation analysis to be used will be reference analysis. Using bibliographies alone will be inadequate for determining the needed information. Research papers in philosophy often rely heavily on a small number of monographs. So, while a bibliography might list three monographs and five journal articles, 80% of the actual references might be to the monographs. If the articles were all available in electronic format but none of the monographs were, then a bibliography based and reference based analysis would provide markedly different results—with the reference-based analysis being the more accurate one.

In situations where a large amount of material is being analyzed it is usually necessary to use some randomly chosen subset of the whole number of references. If done well, this should produce similar results to an analysis in which all the references are counted. Because this study is concerned only with philosophy students at Chapel

Hill, it is not necessary to use a large number of papers. A citation analysis of papers written from 1998 to 2000 should be sufficient to produce adequate results.

Consequently, the researcher will count every reference of every paper used. After deciding on the methodology, the researcher decided that dissertations are too large to be analyzed in this way, so the citation analysis will be based on honors and masters theses written by philosophy students at Chapel Hill from 1998 to 2000. It is worth noting that it would be easy to alter this research design to take into account dissertations, faculty articles or even scholarly monographs.

For every reference in this set of documents the following information was recorded: title, date of publication and format. The researcher considered recording whether a resource was primary or secondary but was convinced by the discussion by Cullars (1998) that in philosophy there is no clear distinction between the two.

Electronic Full-Text Resources

The second step was to compile a list of resources that are electronically accessible and are subscribed to or owned by UNC-Chapel Hill. The list falls into two sections: journals available electronically in full-text, and monographs available electronically in full-text. The list of monographs is the easier of the two to compile. The only source of full-text electronic versions of monographs in philosophy (not including ‘free floating’ full-text web based monographs not officially recognized by Chapel Hill) available at Chapel Hill at the time of this study was the Past Masters database of works by approximately twenty important philosophers.

The list of journals was more difficult to compile because of the number and variety of resources that provide electronic access to them. The resources of primary interest for this study fall into three categories: databases (such as those offered by InfoTrac, ProQuest, EbscoHost and Academic Universe) that provide full-text access to some or all of the articles indexed therein; agglomeration services (such as JSTOR, Project Muse and Poiesis) that provide access to electronic versions of specific journals and monographs; and electronic versions of journals provided by publishers (such as Blackwell, Oxford University Press and Elsevier) to libraries subscribing to the paper version.

The researcher began with the list of philosophy journals indexed by the Philosopher's Index and then noted next to each one whether it was available in electronic format and, if so, from where and for what dates. Resources that provide full-text electronic access to philosophy journals are JSTOR, Project Muse, Poiesis, the full-text databases of Infotrac, Proquest, Ebscohost, and Academic Universe, and publishers that provide full-text electronic access to libraries that currently purchase the paper versions of the journal. For every journal that was available in full-text electronic format, the source of access and dates available were recorded.

Table 1 lists the major resources providing full-text electronic access to philosophy resources, the type of resources covered by the resource, and the approximate years of coverage. Many of the resources are not primarily directed to research in philosophy, but only the philosophy-related use is listed. Further, many of the resources have uses besides providing access to full-text material, but they are not mentioned in the table.

Table 1: Full-text Providing Electronic Resources

Resource	**Type of resources covered**	**Retrospective Coverage**
Past Masters	Full-text access to philosophy monographs of great importance.	Monographs from all periods
JSTOR	Full-text access to10 philosophy journals.	Complete except for latest few years
Project Muse	Full-text access to under 10 philosophy journals	Last two or three years
Poiesis	Full-text access to under 30 philosophy journals	Last few years
Ex. Academic ASAP PA Research II Academic Search Elite	Multidisciplinary indices providing full-text access to numerous philosophy journals	Varies widely, no coverage before the 1980s.
Academic Universe	Comprehensive coverage of law journals	1980s to the present.
Basil Blackwell Oxford UP Elsevier Publishers Springer-Verlag	Publishing houses that provide free full-text electronic versions of journals received by libraries	Late 1990s to the present.

Strengths and Weaknesses of Methodology

The main strength of the methodology is that it produces a very accurate account of the frequency with which electronic full-text resources could have been used by the authors of the papers being analyzed. A good sense of how important electronic resources are to high-level philosophy research should result. Another strength of the methodology is that it is easily replicable in other institutions and can easily be modified to produce results representative of other populations of researchers.

One set of weaknesses of this methodology stem from what it does not attempt to do. Because lower level and professional research is not considered, the results can't be assumed to be indicative of research done by underclassmen or professional scholars. While it seems possible that underclassmen will have more use for electronic resources, it is unlikely that professional scholars will. Only further studies can determine for sure.

Another weakness of this methodology is that the results may lose validity as more electronic resources become available. One major drawback of many resources that provide electronic access to journal articles is that their coverage usually does not extend back to before the nineties. If a new service were to extend coverage to the entire run of a large number of periodicals, it would significantly alter the results of a study such as mine. Likewise, if monographs begin to become widely available in electronic format, the results would be different. With so much information becoming available online so quickly, however, no study of this sort will remain valid for very long. This does not mean that no studies should be done. What my study will show is how frequently electronic resources could be used by a specific body of researchers at a particular time,

and what changes to the electronic publishing industry would make electronic resources more useful.

A final weakness of my study is that it does not take into account the fact that philosophy students may prefer paper versions of various resources. Since philosophy students typically use a limited number of resources intensively, they may have a very limited desire to use electronic versions of monographs. Similarly, many seminal articles are reprinted in important anthologies, which are unlikely to be made available online but might be a preferred resource for students. These facts do not threaten to invalidate the results of this study in any way, but remind us that just because a resource is available online does not mean that it is preferable to traditional equivalents.

Results

A total of 965 citations were counted from 18 theses, 384 from six undergraduate theses and 581 from 12 masters theses. The theses cover a broad range of sub-specialties in Anglo-American Philosophy, and the core areas are particularly well represented. The history of philosophy and the philosophy of law are also covered. Continental philosophy, which is said to be less analytical and less influenced by scientific methodology than Anglo-American philosophy (Cullars), was not the subject of any thesis. The following list provides a breakdown of the subjects covered. It was often difficult to determine the most relevant subject for a particular thesis, and many theses spanned domains (as in a thesis about the political philosophy of Kant—a historical figure), but the list will provide a general idea of what was written about.

Undergraduate Theses
History of Philosophy (1)
Philosophy of Language (1)
Epistemology (3)
Metaphysics (1)
Philosophy of Mind (1)
Philosophy of Science (2)
Political Philosophy (2)
Moral Philosophy (5)
Philosophy of Law (2)

There was no discernible relationship between the subject of a thesis and the number or type of resources used, but it is of course possible that a different set of theses would have different citation characteristics. For example, 18 theses about subjects in continental philosophy may produce significantly different results. The theses about philosophy of law were distinctive in that a higher proportion of the sources cited were available in full text electronic format. This was largely because of the large collection and retrospective coverage of law review journals provided in full text electronic format by Academic Universe.

The citations in the 18 theses were to resources that can be usefully divided into seven categories as displayed in the following two tables. Table 2 shows the number of different citations by type counted in honors theses, masters theses and the two combined. Table 3 shows what percent of the total is constituted by a citation to particular sorts of resources.

Table 2: Citations by type

	Honors Theses (384)	**Masters Theses** (581)	**Total** (965)
Monographs	181	361	542
Journals	81	94	175
Anthologies	59	72	131
Manuscripts	10	0	10
Reference Works	0	2	2
Law Cases	0	41	41
Other	52 (proceedings)	11	64

Table 3: Number of citations to types of resources by percent

	Honors Theses(100%)	**Masters Theses** (100%)	**Total** (100%)
Monographs	47%	62%	56%
Journals	21%	16%	18%
Anthologies	15%	12%	14%
Manuscripts	3%	0%	1%
Reference Works	0%	Less than 1%	Less than 1%
Law Cases	0%	7%	4%
Other	14%	2%	7%

These results are unsurprising and in accordance with what other citation analyses of humanities papers have revealed. Books are the most frequently cited source by a large margin, making up 56% of the total number of citations. Masters theses show a slightly higher reliance on monographs than do honors theses. Citations to journals make up less than 18% of the total. One surprise in this data is the heavy use of anthologies, which are usually not considered in citation analyses. There were nearly as many citations to anthologies as there were to journals (131 to 175). This result is highly significant because anthologies, though often consisting of journal articles, are usually not electronically accessible. Cited less frequently than anthologies are reference works (2 citations), unpublished manuscripts (10 citations) and law cases (41 citations). Law cases are in fact an important source for theses about the philosophy of law, but are very infrequently used elsewhere.

To determine what proportion of the sources cited were available in electronic format, the citations were compared to a list of resources that are available in full-text electronic format. The results of this comparison are listed in tables 4-6.

Tables 4-6: Percent of sources cited available in full-text electronic format

4. Honors Theses

	Full-Text E-Access
Total (382 citations)	43 (11%)
Monographs (181)	17 (9%)
Journals (81)	26 (32%)
Anthologies (59)	0 (0%)
Manuscripts (10)	0 (0%)
Reference Works(0)	0
Law Cases (0)	0
Other (53)	0 (0%)

5.Masters Theses

	Full-Text E-Access
Total (581 citations)	124 (21%)
Monographs (361)	45 (12%)
Journals (94)	38 (40%)
Anthologies (72)	0 (0%)
Manuscripts (0)	0
Reference Works(2)	0 (0%)
Law Cases (41)	41 (100%)
Other (11)	0(0%)

6. Total E-Access for all theses

	Full-Text E-Access
Total (965 citations)	167 (17%)
Monographs (542)	62 (11%)
Journals (175)	64 (37%)
Anthologies (131)	0 (0%)
Manuscripts (10)	0 (0%)
Reference Works(2)	0 (0%)
Law Cases (41)	41 (100%)
Other (64)	0 (0%)

The results show that fairly few of the sources, less than one in five, cited in the theses would have been available in electronic format. This holds true for both undergraduate honors these and masters theses. The percent of citations available in full-text electronic format is somewhat higher for the masters theses, but this is entirely accounted for by the 41 law cases, all of which are available electronically and were only used in 2 theses. Of the resources, journals were the most likely to be available in full-text electronic format. Even with journal articles, however, only 37% were accessible electronically.

Conclusion

The results show that only 17% of the resources used by philosophy students doing high-level research would be available in full-text electronic format. A primary reason why so few of the resources were available electronically is that the philosophy students in this study made heavy use of monographs and anthologies, few of which are available in electronic format. A more significant source of full-text electronic sources is journal articles, but even they are relatively unavailable.

These results are important for at least two reasons. First they can guide the decisions of reference and collection development librarians. Reference librarians should be aware that electronic full-text resources are now totally inadequate to support most high-level research in philosophy. Moreover, the starting place for doing research clearly seems to be traditional resources such as online catalogs and *The Philosopher's Index*. These results also show that philosophy collection developers need to be mindful of the importance of traditional activities such as retrospective monograph purchasing because new technologies are still of marginal importance.

The second reason why these results are important is that they suggest how full-text electronic resources might be improved to meet the needs of philosophy students. To be more useful research tools for philosophers, full-text sources need to provide more access to monographs and anthologies. Likewise, they need to improve their retrospective coverage of journal articles. These improvements would help make full-text electronic resources potentially more important tools for researchers in philosophy.

Summary

The goal of this study was to determine how useful full-text electronic resources could be to philosophy undergraduate and graduate philosophy students at UNC-Chapel Hill. The research study begins to answer this question by determining the low frequency at which such resources could possibly have been used by students who completed honors or masters theses from 1998 to 2000. Many previous citation analyses of philosophy texts have been performed, and the results have consistently shown the philosophers use monographs and older materials heavily, typically outside electronic databases. As far as this researcher knows, nobody has ever used a citation analysis to determine how many of the sources are available electronically.

The information provided by this study is important because philosophy students traditionally have not relied on new technology but technological advances are now making available resources that could be useful to philosophy students. The results of a study like this can be used to help resolve issues such as where limited funds should be devoted and whether philosophy students asking reference questions should be shown electronic or traditional resources. Although this study is not broadly generalizable, it is

easily replicable in a broad variety of settings and suggests the form that a broader, more generalizable study could take.

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