

THE ONLINE BOOKS EVALUATION PROJECT

COLUMBIA UNIVERSITY

FINAL REPORT

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INTRODUCTION

From winter 1995 to autumn 1999, the Online Books Evaluation Project at Columbia University explored the potential for online books to become significant resources in the academic world. The Project analyzed (1) the Columbia community's adoption of and reaction to online books; (2) the relative life cycle costs of producing and owning online books and their print counterparts; (3) the implications of traditions of scholarly communications and publishing and marketplace reactions for online books. The project team thanks The Andrew W. Mellon Foundation for nurturing our efforts through generous financial and intellectual support of this project and related projects that have been valuable to the development of our thinking about these issues. We also thank the publishers who have participated in the project. We hope that the results repay them for their substantial effort in providing books and guiding the evaluation process.

This report encompasses all of the project's analyses, in most cases incorporating data for the period ending June 1999. It includes a discussion of our methodology as well as findings on the following issues: (1) developments in environmental factors in general and at Columbia; (2) use of the online books; (3) users' reactions to the books in their various formats, from surveys and individual and group interviews; (5) costs of publishing and maintaining print and online books in a library; (6) scholarly communications issues; and (7) college and university librarians' reactions to the concept of online books.¹

Over the course of this project, many reports and papers, including one detailing the plans for the research protocol, were issued. These are located at <http://www.columbia.edu/cu/libraries/digital/texts/about.html>.

Our paper *Perspectives on the Potential for Online Books in the Scholarly World* highlights data included in this paper and draws upon other work in this field to make further judgments about the potential value and problems of online books in the scholarly world and marketplace issues.

EXECUTIVE SUMMARY

Like many other projects experimenting with emerging electronic media, the Online Books Project faced impediments to building the collection with which the concept of scholarly online books was to be evaluated. In brief, in most cases, publishers did not possess electronic versions of their books with which we could create an HTML version. As a result, creation of our collection of online books took much longer and, even at the end of the project, that collection was much smaller than our research protocol anticipated.

¹ At the outset, the project intended to explore intellectual property law issues in depth. However, the legal scholar who was to work on this aspect soon left Columbia and it became clear that we would have little that was unique to contribute on this topic.

Nonetheless, project findings were generally supportive of the concept of online books in the scholarly world. We are confident that, within another five years or so, the book software community (scholarly and textbook publishers, vendors, and libraries) will be establishing stable arrangements for providing online books and the hardware community will be creating multi-functional, portable devices that will make the reading and manipulation of texts on-screen satisfactory for most uses of such texts.

In that world, new scholarly books would remain available in print form, especially in major libraries and on a print-on-demand basis at bookstores, but the electronic versions of current reference works, textbooks, scholarly monographs, and collections of essays could serve most scholars for most uses of these works. Students would use online, on-disk (e.g., CD-ROM or DVD), or e-paper versions of books for much of their course work as modern devices would be satisfactory for reading a textbook chapter or two at a time and manipulating the data, analytic software or multi-media information within a textbook. Research scholars could do most of their preliminary and intermediate level browsing and reading in books and journals online. Only when they wanted to read it at length would most scholars seek out a print copy of one of the books available in online form.

This vision relies on the availability in the online format of a large share of the materials that a set of scholars wants to use. If they need to go to the library stacks to find many of the books and journals that they want to review, scholars will find much more limited value in the online format. This being the case, students who rely on textbooks, relatively recent books, and other readings placed on reserve are likely to be earlier adopters of online books as those materials are likely to be available electronically earlier than a massive general collection of scholarly monographic books. In general, advanced graduate students and faculty are likely to adopt this format more slowly, as fewer of their books would be available in this format in the early years. These senior scholars would seek to use print books more extensively for a longer time and would move to the online format only when it provided substantial advantages.

Environmental Developments

The national computing environment over the past few years was generally conducive to the adoption of computers, the Internet, and online resources, including books, by scholars. The most prominent mainstream newspapers like *The New York Times* featured computers, the Internet, and related topics daily. The price/power relationship for personal computers improved enormously, with adequately powerful computers available for under \$1,000 since 1998. Penetration of personal computers and use of the Internet grew throughout American society with over half of households owning one or more computers by mid-1999. But after 1997, the typical domestic user experienced little improvement in available speed of access to the Internet (56K at best) or prices for ISP accounts.

At Columbia University, even as it continued to grow, the modem pool ran at near peak capacity utilization, leaving scholars often frustrated in their attempts to dial-in to the

campus network to do email or use electronic resources.² With falling prices for personal computers, student ownership and penetration into their dormitory rooms grew such that most students reported easy access to the Web and possession of a computer in their campus residences. Students living in Columbia residence halls had the luxury of Ethernet connections that made their Web experience vastly superior to that of the typical graduate student or faculty member working at home and using an ISP or dialing in to the campus network with a modem.

Use of The Online Books Collection

Our collection of six reference works saw varying patterns of change in use during the study period. Use of *The Oxford English Dictionary* grew significantly; with 1,370 unique scholars executing almost 29,000 hits on it in the first half of 1999. *The OED* was the most used resource in the online books collection. Use of *Columbia Concise Encyclopedia* and *Columbia Grangers World of Poetry* declined substantially in the most recent semesters to just a few hundred sessions. Use of *African-American Women*, *Native American Women*, and *Chaucer Name Dictionary* fluctuated greatly from semester to semester, always in the several hundred hits or sessions range.³ (See Tables 5 – 15.)

Use of the three Chadwyck-Healey humanities databases (*English Poetry Database*, *English Verse Drama*, *Patrologia Latina*) grew substantially over time, but it was still relatively modest. During the first half of 1999, 52 to 122 scholars used each of these resources. (See Tables 17-23.)

Use of the 54 *Past Masters* classic texts in social thought declined by half from 6,632 hits in 1996 to 3,384 hits in 1998. (The online books were designed with various book elements, e.g., each chapter, table of contents, index, a search engine, as separate files. One hit could provide a scholar with access to a whole chapter.) However, in spring 1999, hits were 58 percent greater than a year earlier. Use of these texts was largely concentrated in a small share of the titles that were used commonly in classes in political philosophy and theory. In the period July 1996 to June 1999, one-seventh of these texts received two-thirds of the hits. (See Tables 25 - 28.)

The online books collection included 16 monographic (non-reference) titles from Columbia University Press (CUP) as of July 1997, 29 as of July 1998, 34 as of year-end 1998, and 56 as of June 1999. (See Table 29.) Twenty-three of these books were

² Many Columbia scholars residing off-campus had ISP accounts as well as the ability to dial-in to Columbia directly. However, many of the online resources to which the Libraries subscribed required access via a campus node. Using a commercial ISP would preclude a scholar from reaching these resources from off-campus. The online books were accessed via a sign-in with one's Columbia ID, so that a scholar could reach them using any Internet route.

³ These resources were available in two formats for which the measuring systems varied. It is impossible to tell for certain if declines in use of the text-based CNet versions, measured in sessions, were offset by gains in use of the CWeb versions, measured in hits.

assigned reading for one or more courses for one or more semesters during this period.⁴ These monographs received 2,514 hits in 1997, 3,151 hits in 1998, and 1,975 hits in spring 1999. In spring 1999, in 442 cases an individual scholar used a CUP title one or more times.⁵

The collection included 18 monographic titles from Oxford University Press (OUP) as of July 1997, 24 as of July 1998, 32 as of year-end 1998, and 50 as of June 1999. At no point were any of these books assigned reading for a course. Hits on these books totaled 812 in 1997, 915 in 1998, and 606 in spring 1999. (See Table 33.) In spring 1999, in 246 cases an individual scholar used an OUP title one or more times.

Books that were available online appeared to be used by more scholars in their online format than in their paper format. In spring 1999, nearly three times as many scholars clicked on the average online monographic book as circulated its print version.⁶ As the average number of hits per user was four, this use typically had depth beyond just clicking on the Title Page-Table of Contents file. (See Table 37.)

The average number of hits per monographic book user per half year hovered at four to five throughout the study period. However, slightly more of the users used larger numbers of online books in the later periods. (See Tables 38 - 40.)

Scholar Survey & Interview Responses

The project used a wide range of survey instruments and delivery methods as well as individual and group interviews. Obtaining scholars' cooperation was challenging in all cases. The results of the main sets of surveys and interviews are summarized below. The body of the report contains details.

In-Class Surveys

In-class surveys were relatively successful in obtaining responses to questions. They were used when a book in the online collection was required reading for a course. Obtaining cooperation from instructors required persistence in requesting it and was often unsuccessful in the end. Large course enrollments and timing of the survey administration at the beginning of the class session resulted in lower levels of student cooperation. A total of 645 responses were given in 18 classes from fall 1997 to spring 1999.

⁴ This count is based on faculty having put a book on reserve for a course. We had no way of determining if an instructor used a book in a course but did not put it on reserve.

⁵ Some individuals used more than one online book so the total number of individual users was smaller.

⁶ It is possible that a click on an online title was more equivalent to a browse at a library shelf than a circulation, but the total number of clicks and anecdotal evidence indicated that some of the uses were similar to circulation activity.

The in-class surveys found that over time a growing share of students in classes with reading assignments in books in the online collection used the online versions in some way. *One's own copy* of a book was both the most common single method of reading an assignment and the preferred method.⁷ *Using a library print copy* was also more common and more preferred than using any form of the online book until spring 1999 when *using a printout of the online text from a JAKE (network) printer* edged it out as most common. At that point in time, *reading directly from CWeb* also tied *using a library print copy* for preferred method. In spring 1999, all the methods of doing an assigned reading using an online book⁸ tied *using one's own copy* as the most common way of doing a course reading assignment when the book was available online.

Online Surveys

In the two-year period from July 1997 to June 1999, a moderate length online survey received 272 full or partial responses, 72 percent from users of *The Oxford English Dictionary*. (By comparison, in spring 1999, about 45 percent of users and 78 percent of total hits on the online book collection were on *The OED*.) Thus, scholars using books other than *The OED* submitted less than one response per week to this online survey. These scholars reached the survey by clicking on a banner at the head of the Title Page-Table of Contents. The banner noted that the survey respondent would be assisting with research and entered in a raffle for a gift certificate. In spring 1999, 91 persons clicked on the long survey – equivalent to three percent of the scholarly uses of an online book during that period. This was an insufficient response to allow substantial analysis.

In late March 1999 we introduced a series of five brief, pop-up surveys in an effort to generate better response.⁹ The server presented one of these questionnaires to the scholar whenever he clicked on an online book title. In just over five months, scholars gave 177 responses related to monographic online books. About 41 percent of those who viewed monographic online books during this period responded to these questionnaires at least partially, a much greater response rate than that achieved with the long online survey that the scholar had to choose to see.

⁷ The responses to these questions might depend on the nature of the assignment. If only one chapter of a book was required reading for a course, our understanding is that few students would be likely to purchase that book. On the other hand, if the whole book was assigned and the book was available at a reasonable price, a much greater share of the students would be likely to purchase it.

⁸ The methods of using an online book that were defined on the survey were (1) reading it directly from CWeb, (2) printing it out with a networked (JAKE) printer, (3) printing it out with a personal printer, and (4) downloading it and reading it away from CWeb.

⁹ To be precise three series of five questionnaires were introduced – one for monographic works and two for various types of reference works. The responses to the last two types were so few that we analyzed only the responses to the questionnaires for monographs.

Individual and Group Interviews

The project began individual and group interviews with Columbia scholars, mostly graduate students and faculty members, in spring 1995. About 125 individuals participated from spring 1995 to spring 1999. In these discussions, Columbia scholars showed considerable optimism about the potential for online books to make them more efficient and more effective in preparing for classes and in research. Few were willing to read online at length,¹⁰ but most were keen to do initial review of a potentially useful book online, to read a little to a modest amount online, to print out interesting parts if they totaled from a page to a few chapters, and to determine whether they wanted to read so much of the book that they needed to seek out a print copy. Certainty that a book would be available online was comforting to scholars who reported routine difficulty in obtaining print copies from a library. The ability to do one's research from anywhere a computer and Internet connection were available was also attractive. However, these scholars emphasized that online books should be complementary to print books not substitutes for them in a library's collection.¹¹

Costs of Print and Online Books

At the beginning of the project in 1995, the World Wide Web was a promising new phenomenon and it was not clear how its role in scholarly publishing would develop. Early thinking about online books revolved around institutions mounting books locally, possibly after having undertaken conversion efforts. Early planning for cost analyses incorporated this thinking. However, it was soon clear that this was not the best plan for offering online books to the scholarly community. Instead technical developments suggested that publishers or intermediaries between publishers and consumers should be responsible for designing the online books and maintaining them at central locations from which subscribing institutions would provide access. This is, of course, the key model that has evolved for electronic journals. It is also the model that netLibrary, the new vendor of online books, and publishers such as Chadwyck-Healey are offering for online books.

The model for producing online books is early in its evolution, as publishers have not yet developed editorial and production processes that are fine-tuned for this new format. Thus, the current incremental costs of online books may be greater than those the industry will experience in a relatively short while.¹² Online books projects have found that the

¹⁰ In recent discussions some librarians at other universities noted that their undergraduate students reported reading course-related texts online at great length, even in full without reservation. These students indicated to the librarians that they considered the alternative mode of seeking the print copy in the library a waste of time and effort. This was not the response of Columbia undergraduate students; they wanted print copies for long readings.

¹¹ Scholars at institutions with library collections smaller than Columbia's or in cities lacking the breadth of resources available in New York might react differently. They might be happy to have any sort of immediate access to books that are not part of their libraries' collections.

¹² Some online books projects that are working with redefining the publishing process are finding

cost of moving text from printed page or from ASCII files to an online format is typically about \$1.50 per page including HTML or SGML encoding, addition of graphics, and proofreading. Starting from a Quark file, the costs are higher – about \$2.50 a page.¹³ Thus, for a 250-page book with some graphics, conversion to an online format would cost a total of \$375 to \$625. This equals about 10 percent of the plant (typesetting) cost for a typical scholarly monograph. The cost of maintaining such a book on a server would be about \$6 a year, with modest variability based on the number of institutions or individuals accessing it.¹⁴

Libraries have not traditionally calculated their lifecycle costs of acquiring, processing, cataloging, storing, and circulating print books. Hence, our efforts to compare such costs with the equivalent for online books required us to estimate both values, not just the new one. The total lifecycle costs of a print book with a purchase price of \$50 totaled about \$156 in current dollars.¹⁵ The total lifecycle costs for an online book with the same \$50 purchase price might be about \$127 (19% less) if the library did not maintain the book onsite, but faced high costs of cataloging the online version. Details on the derivation of these cost estimates are given in the body of this report.

Scholarly Publishing

The scholarly monograph is an economically endangered product in the modern world. A typical narrowly focused monograph sells fewer than 1,000 copies, the vast majority of them to research libraries. This is troublesome for academe for several reasons: (1) with current publishing practices such a monograph is lucky to break even; (2) scholarly publishers cannot afford to publish many such books if they lose money; (3) scholars rely on publication of their monographs to launch and advance their careers; and (4) advances in knowledge are unlikely to become widely known and discussed if few scholars have access to the books in which they are set forth. Ideally online publishing of books would help to resolve this problem. It might cut costs of production and enhance sales revenue, thus enabling publishers to produce more such books and more scholars to be published more widely. If online publishing led to broader awareness of the contents of scholarly books and to access to them, scholarly discourse would be enriched.

Market Responses

In discussions from summer 1998 to fall 1999, college and university librarians expressed

these changes challenging and not immediately successful at reducing costs for the online version.

¹³ Costs vary greatly with the complexity of the text, graphics, formulas, etc.

¹⁴ Columbia's Academic Information Systems estimates its current costs of maintaining files on a server as about \$800 per GB per year.

¹⁵ The total lifecycle cost of a library owning a book results from calculating the financial present value for each of the costs that a library incurs over the lifetime of the book. This is done by bringing future costs back to the present by discounting them to reflect the value of money. Our calculations assume a five percent cost of money (after deducting for inflation) and a thirty-year useful lifespan for a book.

great interest in and considerable optimism about the potential for online books in their collections. They viewed reference works as having particularly great utility in online form. But they also saw value in having books available in this format that were in high demand, of transient topicality, or not part of their print collections. Fewer were willing to contemplate acquiring online versions of books that are in their standard research collections, mainly because they believed that they could not afford to buy such books twice.

Librarians were concerned about how the market for scholarly books would evolve and particularly how online books would be provided. How would online books be packaged and priced? What guarantees of availability in the short and long run, preservation, format updating and the like would they receive from publishers or vendors? What conditions of use would publishers and vendors seek? What would happen to the important copyright concept of *fair use*? Librarians would also seek provision of cataloging and usage statistics by vendors and user-friendly design of the general interface for online books and of the individual books.

THE ONLINE BOOKS COLLECTION

The project began formal activity in January 1995. However, discussions with publishers began by 1993. The project's *Analytical Principles and Design* document noted the following. *The Online Books Evaluation Project is a component of the developing digital library at Columbia University. As part of its digital library effort, the Columbia University Libraries is acquiring a variety of reference and monographic books in electronic format to be included on the campus network; in most cases, those books will be available only to members of the Columbia community. Some of the books are being purchased. Others are being provided on a pilot project basis by publishers who are seeking to understand how the academic community will use online books if they become more widely available in the future.*

Design of the Online Books Collection

When this project was proposed, the World Wide Web was just emerging, and we expected to develop custom SGML browsers, as other online publishing projects were doing. However, once the project was underway, it seemed clear that the Web would be the best delivery system for maximizing availability of the books to scholars.

Some online projects have provided users with materials in PDF, scanned, or bitmapped format. These are effective formats for journal articles, which are finely indexed through existing sources and which are short and easily printed. However, the greatest potential added value from online books would come with truly digital books.¹⁶ Only this online

¹⁶ Many projects working with books that were already published have used a system of scanning a book's pages and using OCR to create an index of its contents. More recently some have created PDF files from printer's tapes, a system that allows full text searching.

format would allow the development of truly interactive books that would take advantage of the current and anticipated capabilities of Web technology, such as the inclusion of sound and video, data files and software for manipulating data, and links to other online resources. Perhaps only such enhanced online books would offer sufficient advantages over traditional print format that scholars would be willing to substitute them for the print format for some or all of their modes of use and for some or all classes of books.¹⁷

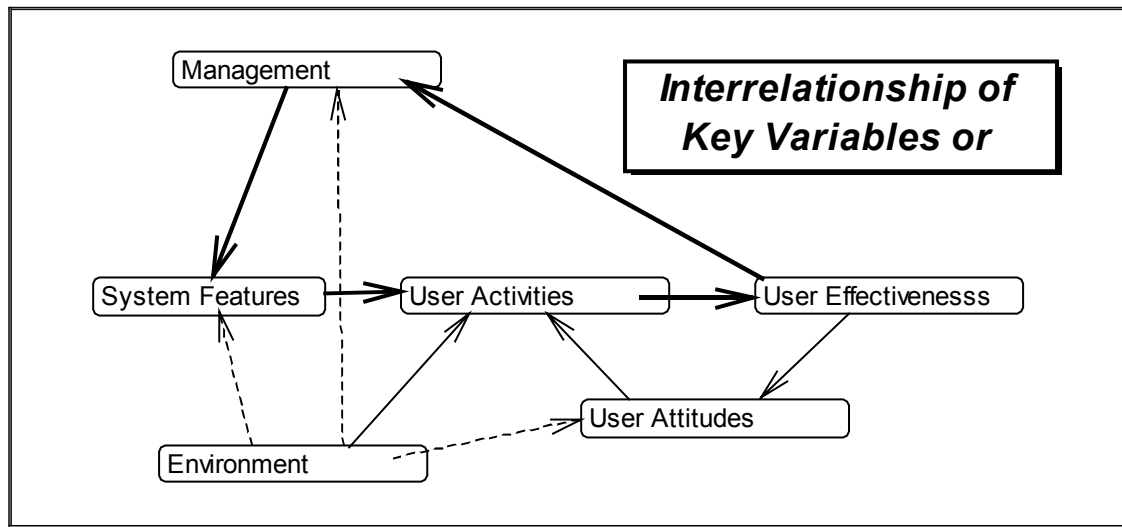
As of June 1999, the project included 168 online texts, including six reference works and 54 classical texts in social thought. The collection included contemporary works in several subject areas: biography, literary criticism, earth and environmental science, philosophy, political science/international affairs, and social work. Each of these books is in the Libraries' collection in print form, circulating from the regular collection or Reserves, or non-circulating in Reference, as well as in one or more online formats.

CONCEPTUAL FRAMEWORK

System Structure Affecting Use and Impact of Online Books

The variables representing usage of a system of scholarly communication and research are both effects and causes. Since scholars, the users of the system, are intelligent and adaptive, the effect of the system will influence their behavior, establishing a kind of feedback loop. As the diagram in Figure 1 shows, there are two key loops. The upper one, shown by the dark arrows, reflects an idealized picture of university administration. In this picture, the features of any system are adjusted so that, when used by faculty and students, they improve institutional effectiveness. This occurs in the context of continual adaptation by the users of the system, as shown in the lower feedback loop.

Figure 1. Interrelation of Factors Involved in the Use and Impact of Online Books



The continual change of the environment affects (1) the expectations and activities of the

¹⁷ The project was not able to test these enhancements to the standard print book format.

users; (2) the kind of features that can be built into the system, and (3) the very management that is bringing the system into existence, and constrains all of this. The dotted arrows depict this interaction.

Our primary research goal, in relation to users, uses, and impacts, was to understand these relationships, using data gathered by library circulation systems, Internet servers, and surveys and interviews of users themselves.

METHODOLOGY FOR STUDYING USE OF & REACTIONS TO BOOK FORMATS

The project's *Analytical Principles and Design* document laid out the evaluation methodology. Formulated in the first year of the project, this methodology remained the working plan. Some of the key measures for documenting use of the online books were:

- The records of the Columbia computing system provided the primary use data for the online books. For books accessed via the World Wide Web, information on date, time and duration of session involving an online book, user's cohort, location of computer, number of requests and parts of the book requested, and means of accessing the book were available as of summer 1997 with the full implementation of the authentication system and related databases.
- Circulation data for each print book in the regular collection provided information on number of times a book circulated, circulation by cohort, duration of circulation, number of holds and recalls. For most libraries, the data available for reserve books were the same as those for books in the regular collection as the CLIO circulation system was used for both.
- The records of the Columbia computing system provided use data for the books accessed via CNet, Columbia's original, gopher-based Campus Wide Information System (CWIS), including the number of sessions, their date and time. These records did not include the duration of the session, the activity during the session (e.g., printing or saving) or anything about the user. These data were collected through August 1998.
- Until mid-March 1997, for books accessed via CWeb, we knew the use immediately preceding the hit on the book, the day and time of the hit. For data collected through that point, our analyses were constrained to patterns of use by time of day, day of the week, and over time.
- In mid-March 1997, users began signing in with their Columbia login name and password in order to use the online books. As a result, we could link user and usage information and conduct a series of analyses involving titles used, number of hits, number of books used, and the like by individual (with identity masked) and to group those individuals by various cohorts such as department and position.

We used many tools in trying to understand the factors that influence use of online books. Table 1 summarizes our complex array of surveys and interviews.

Population	Method	Contact	Response Rate	Remarks
Users of online books	Online instruments: Pop-up	Passive	Moderate	Great brevity still brings <50% response rate
	Online instruments: User click on	Passive	Very low	Cash raffle not sufficient incentive
Users of paper books	Response slips in books	Passive	Unknown	Levels of use not known
Users of course materials in any form	Survey distributed in class after assignment	Active	High	Requires faculty cooperation
Users & non-users	Library & campus-wide surveys	Active	Moderate	No full active survey of the campus
Discipline-specific potential users: Graduate Students & Faculty Members	Surveys, individual & group Interviews	Active	Moderate for email & phone requests for interviews or focus groups Low for mail survey	With a \$50 cash incentive, young scholars were willing to do interviews
Note: Passive instruments are ones, which the user must elect to encounter. Active instruments are distributed in some way, to the attention of the user. High response rates are in the range of 80 to 90 percent completion, with better than 60 percent usable.				

ENVIRONMENTAL FACTORS

National Environmental Variables

We hypothesized that several national environmental variables would affect the adoption of online books within the Columbia community:

- The greater the Columbia community's awareness about online information, personal computing, and the like as a result of discussions in the media, the greater the likelihood that scholars would become users of online resources in general.
- The lower the relative cost of personal computers and the more computing power that a given expenditure purchased the more people would own Web-connected computers and have ready access to online resources.

As Table 2 shows, *New York Times* stories discussed the Internet and the World Wide Web and related topics often. In early 1998, the *New York Times* inaugurated a weekly special section dealing with cyberspace and information technology, as well as a weekly business section focusing on communications. In recent years, hardly a day passed without several articles dealing with the Web, personal computing and related topics.

Descriptor Term						Percent Change			
	1994	1995	1996	1997	1998	'94 - '95	'95 - '96	'96 - '97	'97 - '98
Internet	64	312	391	276	470	+388	+25	-29	+70
Online Information Services	0	155	135	90	41	NA	-13	-33	-54
World Wide Web	0	105	106	44	25	NA	+1	-58	-43
Information Superhighway	25	12	5	1	3	-52	-58	-80	+200
Electronic Publishing	28	26	23	15	21	-7	-12	-35	+40
Computer Networks	179	131	46	16	50	-27	-65	-65	+212
Web Sites	NA	NA	118	195	341	NA	NA	+65	+75

Source: *Newspaper Abstracts*, using so=*New York Times*, subject=Term here, and period=Year given here. *Newspaper Abstracts* uses controlled vocabulary with its subject terms; the term *web site* was introduced in 1996. No other relevant terms were found in article summaries we reviewed.

As personal computing hardware and software evolved, journalists covering the field recommended that consumers acquire more powerful systems. New software demanded more powerful hardware; such systems became more affordable as prices fell. Both the personal computers recommended for households (Table 3) and those available for \$2,000 (Table 4) increased in power more than five fold from 1994 to 1999.

As prices for basic personal computers dropped below \$1,000, more scholars and families could afford them. American household penetration increased from 27 percent in 1995 to 43 percent in 1997 to 50 percent at yearend 1998 and to nearly 53 percent in September 1999. (Source: *Infobeads*, press release, 9/29/1999)

Columbia Environmental Variables

Internet Infrastructure

Columbia's campus infrastructure mirrors that of peer universities in its components and in its continuing expansion and enhancement to meet community demand for access to email and other Internet services.

- As of the mid-1990s, the campus network connected 65 buildings; a T3 line connected the campus to the Internet. The campus core was 100 Mbit FDDI and 155 Mbit ATM. In summer 1999, the campus core was upgraded to several one-Gbit Ethernet links with actual throughput of about six Gbits.

	May 1994	April 1995	April 1996	April 1997	April 1998	Dec. 1998	April 1999	Oct. 1999
CPU	486	486DX2/66	75 MHz Pentium	166 MHz MMX Pentium	233 MHz	300 MHz Celeron or 350 MHz Pentium II	300 MHz	>350 MHz
RAM	4 MB	8 MB	8 MB	16 MB	32 MB	64 MB	64 MB	64 MB
Hard Drive	100 MB	340 MB	1 GB	2 GB	3 GB	6 GB	6 GB	6 GB
Price Est.	\$1,500	\$1,800 - \$2,000	\$2,000	Not given in source	\$1,500	Not given	\$1,300	Not given

Source: Appendix 1. Recommendations from various reporters on the personal computer market.

	Dec. 1994	April 1995	May 1996	May 1997	April 1998	Sept. 1998	June 1999	Sept. 1999
CPU	60 MHz	60 MHz	120 MHz	200 MHz MMX	300 MHz	400 MHz	500 MHz Pentium III	550 MHz Pentium III
RAM	8 MB	8 MB	16 MB	16 MB	32 MB	64 MB	128 MB	128 MB
Hard Drive	540 MB	540 MB	850 MB	1.6 GB	4 GB	10 GB	13.5 GB	20.4 GB
CD-ROM speed	2x	4x	8x	12x	DVD II ROM	32x	6X DVD ROM	6X DVD ROM
Color Monitor	14"	15"	15"	15"	17"	17"	17"	19"
Price*	\$2,099	\$2,099	\$1,999	\$2,064	\$1,999	\$2,018	\$1,999	\$1,999

Note: These specifications are for Gateway systems. * Price does not include shipping. Source: Appendix 2.

- As of late March 1999, over 12,000 ports were connected to the network (up over 20% from late 1997) and 37,000 Ethernet devices, including computers, printers and the like, were registered to community members (up 16% from a year earlier). All fifteen undergraduate residence halls were wired with Ethernet connections for each resident. The modem pool available to the general Columbia community had 482 modems with SLIP/PPP support for most of academic year 1998-1999, up from 298 modems in fall 1997 and 186 modems in fall 1995. The Business School community had exclusive access to another 92 modems. In May 1999, 550 new digital modems serving the whole community replaced the previous 482 modems.
- As of December 1998, AcIS maintained 425 public workstations, Web terminals, and lab computers around the main campus; all were connected to the network. The Libraries had 109 public computers and Web terminals.

Columbia Internet Usage

- The average number of calls to the Columbia modem pool increased about 370 percent from spring 1995 (our earliest data) to spring 1999 – from 28,000 calls a week to 132,000 calls a week.
- Email servers managed over 442,000 email messages during an average week in 1996. That value grew by about one-third to almost 587,000 in fall 1997, by another six percent to 622,000 in spring 1998, and by another 28 percent to 799,000 messages per week in October 1998.
- ColumbiaWeb, the University’s Web site, debuted in September 1994. In the four years from mid-1995 to mid-1999, use of ColumbiaWeb grew almost nine fold. In the second quarter of the calendar year, the following numbers of requests (hits) were made from both within and outside Columbia. All hits, including images, are included here.

Second Quarter	Number of Hits (Millions)
1995	12.50
1996	26.01
1997	54.46
1998	78.99
1999	107.40

The share of these hits originating inside Columbia increased from 10 percent in the second quarter of 1995 (1.2 million) to 39 percent (41.9 million) in the second quarter of 1999.

Columbia Student Computer Expertise & Ownership

At the beginning of the 1997-98 and 1998-99 school years, we surveyed incoming

students about their current ownership of computers and their expectations for acquiring a computer. A large and increasing share of these students, primarily first year undergraduates, had a computer or expected to acquire one soon.

The fall 1998 survey, conducted during orientation, had 694 undergraduate respondents, with over-representation of the School of Engineering and Applied Science and under-representation for the School of General Studies, the program for non-traditional students.

Over 87 percent of these new undergraduates had access to a computer with an Internet connection at their family homes. Less than one percent had no access to an Internet-linked computer before they came to Columbia.

These students generally felt that they were moderately skilled at using a computer. The SEAS students had the greatest confidence in their computer skills while the School of General Studies students had the least confidence.¹⁸

As of 1998 orientation, 75 percent of the respondents already had their own computers at Columbia (up 11 points from 1997). Another 19 percent expected to acquire one soon (down 7 points from 1997). Thus, a total of 94 percent had or expected to have their own computers at their campus residences (up four points).

The Columbia residence hall network has 4,850 ports; students had registered 2,940 ports (65% penetration) as of spring 1998, over 3,500 (72%) as of October 1998, about 3,800 (78%) as of spring 1999, and 4,039 (83%) as of September 30, 1999.

COLUMBIA USE OF ONLINE JOURNALS

Online journals have a greater presence in Columbia's library collections than do online books. Reviewing their rate of usage gave a base of comparison for the use of the various books in our collection. Both IDEAL and JSTOR¹⁹ provided data on use of their online journals by Columbia scholars. Each of these sets has much more content than the online book collection, so a direct comparison was not possible. However, the substantial and growing use of these journals suggested that scholars were willing to adopt the online form of journals.²⁰

¹⁸ The School of General Studies students are the cohort at Columbia that is most like the distance education students at other institutions. They displayed less previous experience with computers and online resources and less confidence about their knowledge of computing. Thus, they are least likely to be well equipped to deal with a distance education system that relies on computing, the Internet, and the like.

¹⁹ The Journal Storage Project, an enterprise started by The Andrew W. Mellon Foundation, which has produced online versions of journals starting at the beginning of their publication and proceeding to within about five years of the current data.

²⁰ Journals and books may have sufficiently different use modalities that online journals will be much more successful than online books. The book uses most like journal uses are reviewing

IDEAL provided subscribing institutions with the number of sessions and the number of PDF downloads of articles by their scholars in each month. During eleven months of 1998 (April data were not available), Columbia had 9,165 sessions and 6,302 PDF downloads. Usage increased so sharply that the first half of 1999 had about as many sessions and downloads as those eleven months of 1998.

JSTOR provided subscribers with data on the number of accesses for browsing title-list, volume/issue, table of contents, and citations, for viewing pages, for printing, and for searching. During 1998 Columbia had 76,593 accesses, including 30,527 page viewings, and 8,654 printings of articles. October was the peak month in 1998 with 13,886 accesses, up 238 percent from a year earlier. With increased awareness within the Columbia community and more content (both titles and years of coverage), usage continued to grow. In the first seven months of 1999, Columbia scholars had a total of 105,195 accesses, up 37 percent from all of 1998. April was the peak month in spring 1999, with 24,760 accesses, 78 percent more than in the peak month in 1998. In that single month, JSTOR use was equivalent to about one access per Columbia scholar.

COLUMBIA USE OF RESERVE ROOM MATERIALS

The reserve room is one service center of a scholarly library that appears amenable to substitution of online books for traditional books. Reserve books have substantial drawbacks for scholars: the short period of use (typically two hours or overnight at the end of a day), and the competition for use for a course assignment which often makes the print book unavailable when sought. An online book might substitute successfully for a print copy for either reading a modest portion of an online book onscreen or printing out a few pages to several chapters. Printing out pages of the online book would be equivalent to photocopying from the print book, a common practice with books on reserve.

In March 1998 surveys in two of Columbia's busiest reserve rooms (Butler and Lehman-Social Work) sought to determine the nature of the use of reserve materials, particularly books, and how well online books might substitute for print books on reserve. Findings, based on 341 usable responses, are summarized below.

About 75 percent of the borrowed items were books. About one in five book borrowers had been unsuccessful in obtaining that book from reserves previously. The share of respondents checking off each of the following reasons for borrowing a book was:

Required reading for a course	74%
Research for a paper	20%
Recommended reading for a course	9%
Other reasons	5%
Current awareness reading	2%

short entries in reference works and searching and browsing in longer works.

Note: Respondents were asked to check all relevant categories.

While most of the use of the reserved books was for required or recommended reading for a course (83%), one-fifth was for research for a paper.²¹

The following table gives the distribution of intended uses for the borrowed books.

Read all or part of the book itself	58%
Take notes on paper	48%
Photocopy all or part of the book	35%
Take notes on computer	6%
Underline or annotate photocopy	6%
Note: Respondents were asked to check all relevant uses.	

Over half intended to read from the book itself and almost half intended to take notes on paper. Only a third intended to photocopy some part of the book.²²

Respondents were asked (1) the amount of the book they intended to read and (2) the amount they intended to photocopy. Of those who answered these questions, about **40 percent** of book borrowers expected to read 50 or fewer pages.²³ About **56 percent** of those reading 50 or fewer pages expected to photocopy some portion of what they read, with about **two-thirds** expecting to photocopy most or all of what they read. In general, the greater the number of pages the scholar intended to read the smaller the share he expected to photocopy. Thus, if scholars were willing to read portions of books of up to 50 pages on a computer in one or several sessions, about 40 percent of borrowers of books from reserves might substitute online books for print books on reserve. On the other hand, if scholars were unwilling to read that much of a book at the computer and would only substitute printouts for photocopies, the portion of reserve book borrowers willing to substitute an online book might shrink to about 15 percent. This 15 percent is those reading a sufficiently small portion of the book that they might be willing to print out that segment from an online copy (i.e., 40% x 56% x 66% from the above narrative).

At this point in the development of computer technology and habits for using online materials, when a scholar intends to read a substantial share of a book (for example, over 50 pages), he is unlikely to be willing to read it onscreen or to print it out. Rather he is

²¹ In interviews scholars, especially graduate students and faculty members, commonly complained that many of the books – especially newer ones -- that they might have liked to use for their current awareness and research were on reserve for courses and, thus, difficult to access for these uses. Some said that this had driven them to purchase books that they did not want for their personal collections but did want to have available for a longer time than a reserve circulation period.

²² This is contrary to library folk wisdom, which asserts that in most cases borrowers of reserve room materials photocopy them. Borrowers did report a great likelihood of photocopying all or part of journal articles.

²³ That value was one of the several designated on the questionnaire.

likely to want to read from the print book, to take notes on paper, and possibly to photocopy a few of the most relevant pages. However, if that *reading* is, in fact, a combination of careful consumption of a few pages, skimming and searching through major parts of the text, and copying of a few significant passages by photocopying or notes, then the online book may be a satisfactory substitute. In interviews, focus groups, and related print questionnaires, scholars reported such a pattern of book use was common.²⁴ Further study should be conducted with a collection of online books that includes many titles that are used in courses.

INDIVIDUAL SCHOLARS' USE OF ONLINE BOOKS OVER TIME

One method used to analyze the patterns of adoption of online books by Columbia scholars was to track use by individuals over time.²⁵ We conducted such analyses (1) for *The OED*, as it had such a substantial share of use throughout the project period, and (2) for the rest of the collection. In each analysis we took the server data for the whole period for which we had data on use by individuals, i.e., from March 1997 when the sign-in system was put into operation, and accumulated the data by individual.²⁶ We also accumulated these hits data by type of page that was used, i.e., *OED* search engine, entries, and all others or various types of files, e.g., chapters, index, search engine, in monographic books.

The OED

This analysis found that 2,099 distinct scholars used *The OED* in its CWeb format during the March 1997 to June 1999 period. These users visited definition pages 55,031 times, for an average of 13.6 entries per user.

Undergraduate students were the most prominent users of this online resource. About 58 percent of the unique users were undergraduates at the time of their first uses of *The OED*. Less than 4 percent of users were faculty members. About 12 percent were students in graduate and professional programs.

Over 35 percent of users were identified as affiliated with Columbia College; nearly 13

²⁴ See Mary Summerfield, *Online Books: What Role Will They Fill for Users of the Academic Library?* in **Finding Common Ground**. Cheryl LaGuardia and Barbara A. Mitchell, editors. New York: Neal-Schuman Publishers, 1998, 313-325.

²⁵ Paul Kantor's two reports of these analyses for *The OED* and the rest of the collection are available at <http://www.columbia.edu/cu/libraries/digital/texts/about.html>.

²⁶ Our later discussion of the number of users of individual books by half year periods does not track individuals across time. For example, if 20 persons used Book A in fall 1998 and 25 persons used Book A in spring 1999, all 20 of the fall 1998 users could have returned or all 25 of the spring 1999 users could have come newly to the book. That analysis does not tell us where along this continuum the truth about users lies. The current discussion attempts to answer this question.

percent were affiliated with the Engineering; and almost 12 percent with Arts and Sciences. Columbia College students had nearly 44 percent of the sessions, 47 percent of the clicks, and 46 percent of the minutes of use of *The OED*. Engineering affiliates had 13 percent of the sessions, 12 percent of the clicks, and 12 percent of the minutes. Arts and Sciences affiliates had 13 percent of the sessions, 12 percent of the clicks, and nearly 13 percent of the minutes. Thus, by sessions, clicks and time measures, the Columbia College students were more intense users of *The OED* than Engineering or Arts and Sciences affiliates.

Another cohort variable was the number of years that a student had been at Columbia when he first used *The OED*. Almost 38 percent of the students for whom this information was available were second year students when they first used this resource. About 20 percent were third year students, almost 18 percent fourth year students, and 13 percent first year students.

During the period of analysis 3,599 sessions of *OED* use occurred. The mean number of sessions for a user was 4.6; the median was two; the minimum was one; and the maximum was 178. The mean number of clicks for a user was 22.9; the median was eight; the mode was two or three; the minimum was one; and the maximum was 751. The number of clicks that a scholar made on *The OED* dropped off exponentially. Specifically, the chance that a scholar made one more use of *The OED* was two out of three, given that he or she had used it more than once already.

Total time using *The OED* was estimated by assuming that consecutive clicks formed a single session, unless there was a gap of 15 minutes or longer between these clicks.²⁷ The mean number time was 22 minutes; the median was almost six minutes; the minimum was 0.8 minute; and the maximum was nearly 727 minutes (12.1 hours). Total time using this version of *The OED* seems to have shown an exponential decline as well, with about a one in seven chance of adding another ten minutes of use.

Monographic Online Books

Total Use

This analysis found 2,160 distinct individual scholars using one or more of the monographic books during the March 1997 to June 1999 period. These users had a total of 4,430 sessions during this period, or a mean of about two sessions each. As the following table shows, distribution by number of books used was highly skewed. Two-thirds of the scholars used only one of these online books and another 14 percent used only two books. Thus, 80 percent of these scholars (1,735 individuals) used only one or two of the monographs in the online books collection. Only 425 individuals used more than two monographic online books from mid-March 1997 through June 1999. A regression analysis of these data suggests that there were two patterns of using the online

²⁷ If the gap were 15 minutes or longer, the usage was defined as two sessions.

books collection. The first pattern (determined by log linear regression to include about 460 scholars) began with one-book users and dropped exponentially as more books were used. The other pattern, involving the rest of the one-book users, was characterized by essentially zero probability of going on to a second book.

<u>Number of Books</u>	<u>Percent of Users</u>
1	66
2	14
3	7
4	5
5	2
6	2
7	1
8	1
9 - 18	2
19 - 28	*
29 - 39	*
65	*

* 0.5% or less.

These two patterns reflect behaviors observed over this 2.25-year period with the small but growing collection of online books. If the collection had been much larger from the start of this analytical period (say thousands of recent titles rather than a few dozen), the patterns of use might have been much different. Many more scholars might have found it valuable to return to the collection multiple times. With few books in the collection even by spring 1999, it was unlikely that many scholars would find even one book of value to their work, let alone several books.

Similarly, the most common pattern of use of the monographic online books was to review one chapter (1,691 instances or 38 percent of the total 4,430 sessions). Another 1,113 sessions (25%) involved the use of no substantive chapters, e.g., the scholar clicked on only the Title Page – Table of Contents file. Above one session, the number of sessions dropped off exponentially with the number of chapters. It is as if at each chapter a user had a 46 percent chance of proceeding to another chapter. The maximum number of chapters clicked on was 269; the mean was 2.8 chapters.

The use of the books was concentrated in a small share of the titles. This reflects the normal usage of library books; it also reflects the differing periods of availability of these books as some were online from the beginning of the period of analysis and some became available in spring 1999. The most used title was the *English Poetry Database* (299 sessions, 7 percent of the total), followed by the *English Verse Drama Database* (176 sessions, 4 percent). Twelve books (8 percent of the total) had 100 or more sessions each and accounted for 36 percent of the total sessions. Five of these were modern monographs; four were classical texts in social thought; and three were humanities databases. Another 19 books (13 percent) were responsible for the next 30 percent of the sessions. Thus, the top 31 books (21 percent of the collection in June 1999) accounted

for 66 percent of the sessions over this 2.25-year period.

Patterns of Use

Two basic variables were analyzed for the usage patterns for the monographic online books. The use of finding aids, i.e., the Table of Contents, index, search engine, were about 20 percent of total hits on these books at 3,353 hits out of a total of 16,484 hits. The use of such finding aids was categorized as (1) being used only at the start of a session (51% of total hits on all finding aids), (2) being used only once but not at the beginning of the session (2%), (3) being used more than once (30%), and (4) not being used at all (17%). The OUP books were most likely to have no use of a finding aid (26%) or using a finding aid only at the start of the use (55%).

An online book's Title Page - Table of Contents was the page to which the Web catalogue, the A-Z listing of titles, and the subject grouping listings took a user. Thus, it was logical that most of the scholars would have gone to a finding aid, most likely the Table of Contents, at the start of a session of using one of these online books. Only those who were given a more specific URL say on a course syllabus, or who had bookmarked a chapter URL in a previous use would have been likely to know of a different entry point.

The path the scholar took through the chapter files of a book was assessed as (1) *linear* -- moving forward through chapters (25%), (2) *hyperlinear* -- with no loops through chapters (61%), and (3) *hypertextual* -- with loops through the chapters (14%). These data could not reveal the actual pattern of reading a book as the scholar could retrieve chapters from his computer's browser cache for use after they were accessed from the server. The patterns observed were virtually the same for the sets of books from various publishers.

Cohort Use

Undergraduate students were the group with the greatest number of users of the online monographs. About 40 percent of the unique users were undergraduates at the time of their first use of one of the online monographs. About 27 percent were students in graduate and professional programs. Only four percent of users were faculty members.

About 22 percent of these users were affiliated with Columbia College, about 15 percent with Arts and Sciences, about 11 percent with Social Work, and about 7 percent with Engineering. Sessions were distributed relatively consistently with users: Columbia College students -- 23 percent, Arts and Sciences affiliates -- 17 percent, Social Work affiliates -- 12 percent, and Engineering affiliates -- 8 percent. Thus, these cohorts were similar in the intensity of their use of these books by the session measure. Columbia College students executed 25 percent of the chapter clicks, Arts and Sciences affiliates -- 18 percent; Social Work affiliates -- 17 percent, and Engineering affiliates -- 8 percent. Thus, Social Work affiliates were more intense users of the online books as measured by the considerable excess of share of chapter clicks compared to sessions or users.

USE OF ONLINE REFERENCE BOOKS

The following sections analyze the server data on the use of the various online reference books.

Concise Columbia Electronic Encyclopedia

The Concise Columbia Electronic Encyclopedia was available only on the CWIS-gopher platform CNet. Usage declined 87 percent from the first half of 1994 (7,666 sessions) to the first half of 1998 (966 sessions). Data were not available after August 1998. Demographic data on the users of the CNet resources were not available.

Table 5. Concise Columbia Electronic Encyclopedia CNet Sessions

Quarter	Number of Sessions					Percent Change			
	1994	1995	1996	1997	1998	'94 -'95	'95 -'96	'96-'97	'97-'98
1	4,360	3,825	2,633	959	571	-12	-31	-63	-40
2	3,306	2,558	1,680	579	395	-23	-34	-66	-32
3	2,580	1,732	954	389	154*	-33	-45	-59	D
4	4,775	3,113	1,247	770	D*	-35	-60	-38	D
Total	15,021	11,246	6,514	2,697		-25	-42	-59	-37#

Note: July 1995 hits are estimated. * Data are not available from September 1998.

Percent change for first six months of years.

Graph 1. Concise Columbia Electronic Encyclopedia Sessions: CNet

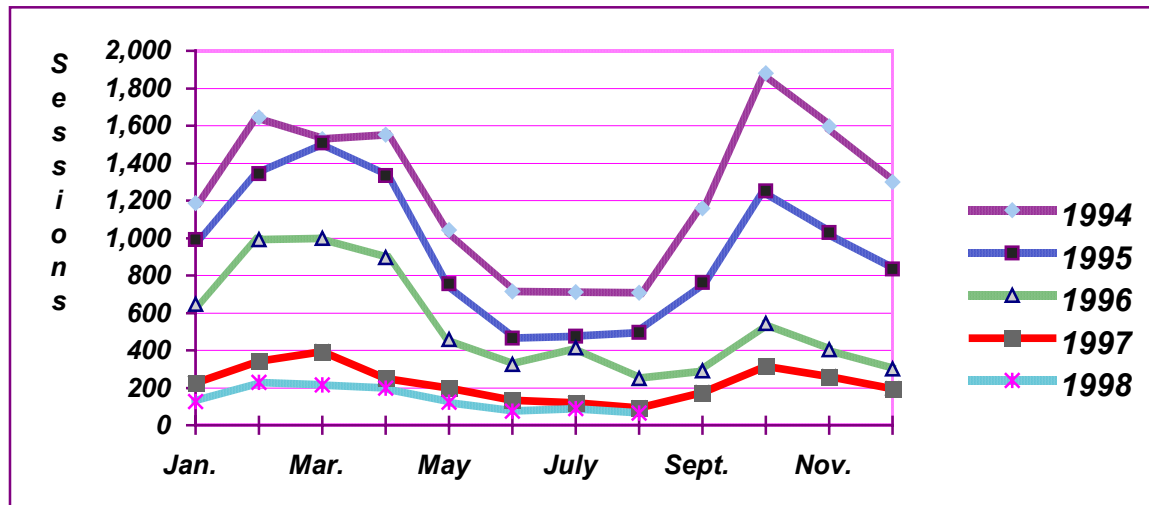


Table 5 and Graph 1 show both the seasonality of use of resources in an academic community and the overall decline in use of this early text-based, brief entry, online

encyclopedia. The increasing availability of alternative online and CD-ROM encyclopedias, which provide more information, likely caused this decline. The Columbia community seems to have substituted use of these richer resources for the *Concise Encyclopedia*.

As the following table shows, on Columbia's Morningside campus, use of the online *Encyclopedia Britannica* was substantial and growing from 1997 through 1999. If data were complete, hits would likely have totaled over a half million in the first nine months of 1999 -- versus fewer than 3,000 sessions with the *Concise Encyclopedia* in 1997, the last year for which we have complete data.

Hits	1997	1998	1-9/1999
Queries	28,684	34,079	27,977
Documents	47,777	49,562	30,841
Total	278,058	339,759	457,094
Note: Statistics were incomplete from mid-February to early June 1999; thus, usage was under-reported.			

Columbia Granger's World of Poetry

Columbia Granger's World of Poetry was available both on CNet and on the Columbia Web site (CWeb). The former is a lynx (non-graphical Web) version of the latter. CNet usage was measured in sessions; CWeb usage was measured in hits. As a result, the two cannot be summed.

Quarter	CNet Sessions					CWeb Hits				
	1994	1995	1996	1997	1998	1995	1996	1997	1998	1999
1	-	718	324	90	90	NA	1,213	1,729	1,235	366
2	-	414	138	64	31	1,377!	579			
3	-	234	182	61	12*	1,913	589	3,935	364	NA
4	518#	344	162	110	D^	2,388	932			
Total	NA	1,710	806	325	NA	NA	3,313	5,664	1,599	NA
Change From Previous Year			-50%	-60%	NA	NA	NA	+71%	-72%	-70%
Notes # Data included November and December only. July 1995 CNet hits were estimated. * Included July and August only. ^ CNet data were not collected after August 1998. ! Included May and June 1995 only. CWeb data for 1997-1999 were for six-month periods.										

CNet usage declined by 89 percent from the first half of 1995 (1,132 sessions) to the first half of 1998 (124 sessions). (Table 6) Data on CNet usage were available only through August 1998. From the first of 1996 to the first half of 1999, CWeb use declined by 70 percent to 366 hits. In the first half of 1999, 94 Columbia scholars used this resource via

the Web, for an average of nearly four hits per Web user during this period.

The Oxford English Dictionary

The Oxford English Dictionary was always the most heavily used work in the Columbia online books collection. The dictionary was available on both CNet and CWeb, with the former format analytically functional but difficult to use. Users found the latter offering attractive and easy to use, but its functionality was limited to looking up an entry or browsing.

Overall Use

From the first half of 1995 to the first half of 1998, the number of sessions on the CNet version of *The OED* declined by 54 percent to 1,833 sessions. CNet usage data were not available after August 1998. From 1997 to 1998, use of the CWeb version more than doubled to 38,165 hits. Usage nearly doubled from the first half of 1998 to the first half of 1999 to nearly 29,000 hits. (Table 7)

In the second half of 1998, the CWeb version of *The OED* had 1,067 distinct users and 23,370 hits, for an average of about 22 hits per user. In the first half of 1999, 1,370 scholars used *The OED* (an increase of 28%), executing 28,739 hits for an average of 21 hits per user.

Quarter	CNet Sessions					CWeb Hits			
	1994	1995	1996	1997	1998	1996	1997	1998	1999
1	0	2,429	2,245	1,167	1,132	NA	5,593	14,795	28,739
2	0	1,563	1,472	845	701	NA			
3	NA	1,132	1,001	611	201*	1,833	12,954	23,370	NA
4	2,856	2,348	1,436	2,243	*				
Total		7,472	6,154	4,866	NA	NA	18,547	38,165	NA
Change From Previous Year			-18%	-21%				+106%	+94%

Notes: * July 1995 CNet usage is estimated. *The OED* became available on CNet in August 1994, but usage data are available from October 1994 only. * CNet data are not available after August 1998. CWeb hits data are for six-month periods.

Cohort Use

The departments with the greatest shares of the CWeb *OED* users in spring 1999 were Columbia College (42%) and Engineering (14%). (Table 8) This may reflect the significance of the Logic and Rhetoric course to the use of this resource as both Columbia College and undergraduates in Engineering (SEAS) are required to take it.

Department	User Share (%)				Hits Share (%)			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Columbia College	30%	26%	25%	42%	46%	35%	29%	44%
Arts & Sciences	NA	NA	NA	14%	NA	NA	NA	15%
English	4%	6%	8%	NA	5%	8%	18%	NA
Engineering	12%	10%	12%	14%	11%	12%	8%	12%
General Studies	6%	5%	6%	6%	7%	4%	8%	11%
Arts	2%	3%	4%	2%	2%	4%	4%	1%
Barnard College	NA	NA	4%	5%	NA	NA	4%	8%
Teachers College	NA	NA	3%	2%	NA	NA	2%	1%
Total	771	819	976	1,237	12,954	14,795	22,770	28,245

Similarly, Columbia undergraduates were the greatest users, in number, hits, and hits per user. *Other users* were the next largest group of users. (Table 9) To put this usage in perspective, in the first six months of 1999, about 10 percent of Columbia undergraduates used this resource.

Table 9. The OED on CWeb: Main User Statuses

Columbia Status	Number of Users				Share of Users (%)				Share of Hits (%)			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Undergraduate Student	441	506	636	794	57	62	60	64	73	72	76	72
Graduate Student	35	41	99	103	4	5	9	8	3	6	75	8
Other Student	21	30	32	55	3	4	3	4	3	2	2	2
Assistant Professor	11	17	14	18	1	2	1	1	2	3	1	1
Associate Professor	3	5	7	11	*	1	1	1	*	*	*	1
Professor	12	9	18	20	2	1	2	2	1	*	1	1
All Other Users	248	211	245	240	32	26	23	20	18	17	12	15
TOTAL	771	831	1,051	1,241	100%	100%	100%	100%	12,954	14,795	22,968	28,309

Note: * 0.5% or less. Other student is comprised of graduate students in professional programs.

Garland Reference Works

Garland's *Chaucer Name Dictionary* was added to the CWeb collection at the end of 1996 and to CNet in February 1997. *Native American Women: A Biographical Dictionary* was added to CWeb in January 1997 and to CNet in February 1997. *African American Women: A Biographical Dictionary* was added to CWeb in February 1997 and to CNet in March 1997. *The Encyclopedia of Rhetoric and Composition* was added to CWeb in August 1999, too late to be included in these usage data.

Table 10. Garland Reference Works: Web Hits and Users and CNET Sessions					
	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Chaucer Name Dictionary</i>					
CWeb Hits	336	291	58	118	194
CWeb Users #	12	39	20	39	38
CWeb Hits/User	NA	7.5	2.9	3.0	5.1
CNet Sessions	59	32	29	D	D
<i>African American Women</i>					
CWeb Hits	312	384	181	267	334
CWeb Users #	8	38	28	56	54
CWeb Hits/User	NA	10.1	6.5	4.8	6.2
CNet Sessions	53	57	45	D	D
<i>Native American Women</i>					
CWeb Hits	352	170	54	79	156
CWeb Users #	12	26	16	20	42
CWeb Hits/User	NA	6.5	3.4	4.0	3.7
CNet Sessions	26	30	16	D	D
# CWeb user data are available only after March 15, 1997. User data are individuals in each period. There may be duplication across periods. NA: Not Available. D: Data were not collected after August 1998.					

CWeb appears to have been a more popular means of accessing these works (though hits on CWeb are not comparable with sessions on CNet). (Table 10) Use of each of these resources (less than 1,000 uses a year) was modest compared to the size of the Columbia community or to use of *The OED*, but it was substantial compared to the handful of consultations that each received in its print form in the Columbia libraries.

Columbia College was the departmental home for the greatest numbers of users of *The Chaucer Name Dictionary*. (Table 11) Similarly, undergraduate students were the greatest users. Faculty members hardly used it at all. (Table 12)

Table 11. <i>The Chaucer Name Dictionary on CWeb: Share of Users from Key Using Departments</i>				
Department	User Share (%)			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Barnard College	NA	NA	27	3
Columbia College	26	32	24	42
Arts & Sciences	NA	NA	NA	21
English	13	0	8	NA
Engineering	3	0	11	8
General Studies	3	5	8	5
History	3	0	0	NA
Political Science	0	5	0	NA
Total Number Users	39	19	37	38
NA: Data are not available.				

Table 12. <i>The Chaucer Name Dictionary on CWeb: Users By Columbia Status</i>								
Columbia Status	No. Of Users				User Share (%)			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Undergraduate Student	16	12	25	20	41	63	64	53
Graduate Student	3	1	3	5	8	5	8	13
Other Student	0	0	2	1	0	0	5	3
Assistant Professor	0	0	0	0	0	0	0	0
Associate Professor	0	0	1	1	0	0	3	3
Professor	0	0	1	0	0	0	3	0
Other Users	20	6	7	11	51	32	18	29
TOTAL	35	19	39	38	100%	100%	100%	100%

In spring 1999, the key user departments of *African American Women: A Biographical Dictionary* were Columbia College and Arts and Sciences (graduate students and faculty). (Table 13) Similarly, undergraduates and graduate students were the greatest user groups. (Table 14)

Table 13. <i>African American Women on CWeb: Percent of Users from Key Using Departments</i>				
Department	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99

Department	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Barnard College	NA	NA	12	11
Columbia College	10	0	6	31
Engineering	8	4	3	4
Arts & Sciences	NA	NA	NA	22
General Studies	10	0	2	4
Political Science	5	0	8	NA
Social Work	18	15	4	4
Teachers College	NA	NA	12	13
Total Number Users	38	26	48	45
NA: Data are not available.				

Columbia Status	No. Of Users				User Share (%)			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Undergraduate Student	13	6	15	20	34	23	28	44
Graduate Student	9	7	11	12	24	27	21	26
Other Student	2	1	3	0	5	4	6	0
Assistant Professor	0	1	2	0	0	4	4	0
Associate Professor	0	0	0	0	0	0	0	0
Professor	0	0	0	1	0	0	0	2
Other Users	14	11	22	13	37	42	42	28
TOTAL	38	26	53	46	100%	100%	100%	100%
Note: The Undifferentiated Users category includes users from affiliated institutions whose status is not included in the University database.								

Columbia College, Arts and Sciences, and Social Work were the departmental homes of the most users of *Native American Women: A Biographical Dictionary*. (Table 15) Similarly, undergraduates and graduate students were the greatest users of that work. (Table 16)

Table 15. Native American Women On CWeb: Percent of Users for Key Using Departments

Department	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Columbia College	31	0	25	34
Barnard College	NA	NA	12	5
Biology	0	0	6	NA
Arts & Sciences	NA	NA	NA	10
Engineering	15	6	6	3
Journalism	8	8	0	0
Social Work	15	12	6	8
General Studies	0	12	0	5
Total	26	16	16	38

Table 16. Native American Women on CWeb: Distribution of Users By Columbia Status

Columbia Status	No. Of Users				User Share (%)			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Undergraduate Student	13	5	6	16	50	31	30	41
Graduate Student	6	2	4	6	23	12	20	15
Other Student	1	0	2	3	4	0	10	8
Assistant Professor	0	1	0	0	0	6	0	0
Associate Professor	0	0	0	1	0	0	0	3
Professor	0	0	0	0	0	0	0	0
Other Users	6	8	8	13	23	50	40	33
Total Users	26	16	20	39	100%	100%	100%	100%

Chadwyck-Healey Humanities Databases

As of late 1997, Columbia's digital library collection included three major Chadwyck-Healey full text humanities databases, *English Poetry (EPD)*, *English Verse (EVD)*, and *Patrologia Latina (PLD)*. In late January 1998, these were made widely available to the Columbia community via addition to the reference listings of LibraryWeb and in the Online Books collection. Table 17 shows the number of hits, users, and hits per user for each of these databases for spring 1998 to spring 1999. Growth in use was most substantial for the two English databases.

	English Poetry			English Verse			Patrologia Latina		
	Hits	Users	Hits/ User	Hits	Users	Hits/ User	Hits	Users	Hits/ User
Spring 1998	295	49	6.0	179	22	8.1	583	33	17.7
Fall 1998	542	102	5.3	270	44	6.1	366	26	14.1
Spring 1999	870	122	7.1	602	74	8.1	891	52	17.1
% Change Spring 1998 to 1999	+195	+149	+18	+236	+236	0	+53	+58	-3

The departments with the greatest shares of the users of the *EPD* and the *EVD* were Arts and Sciences (English in earlier periods) and Columbia College. (Tables 18 and 20)
Undergraduate students were the greatest category of users of both the *EPD* and the *EVD*. (Tables 19 and 21)

Department	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Arts	25	2	2	4
Barnard College	NA	NA		10
Columbia College	0	6	18	26
Arts & Sciences	NA	NA	NA	29
English	25	14	22	NA
Engineering	0	8	7	4
General Studies	0	6	4	9
History	25	10	7	NA
Teachers College	NA	NA	6	2
Total Users	4	49	90	110

Columbia Status	No. Of Users				Share of Users (%)			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Undergraduate Student	1	15	45	50	25	31	46	45
Graduate Student	1	6	14	15	25	12	14	13
Other Student	0	6	2	5	0	12	2	4
Assistant Professor	0	0	0	1	0	0	0	1
Associate Professor	0	0	1	1	0	0	1	1
Professor	0	0	4	3	0	0	4	3
Other User	2	22	33	37	50	45	33	33
TOTAL	4	49	99	112	100%	100%	100%	100%

Columbia Status	No. Of Users				Share of Users (%)			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Undergraduate Student	0	5	18	39	0	23	42	56
Graduate Student	1	3	5	7	100	14	12	10
Other Student	0	1	4	1	0	4	9	1
Assistant Professor	0	0	0	1	0	0	0	1
Associate Professor	0	1	0	1	0	4	0	1
Professor	0	0	2	1	0	0	5	1
Other User	0	12	14	19	0	54	33	30
Total Users	1	22	43	69	100%	100%	100%	100%

Department	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Columbia College	0	9	12	32
English	0	32	37	NA
Arts & Sciences	NA	NA	NA	31
History	100	9	2	NA

Table 21. The English Verse Database: Percent of Users for Key Using Departments				
Department	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Total Users	1	22	43	68

The departments with the greatest shares of the users were History and English in the Arts and Sciences. (Table 22) Graduate students were the greatest numbers of users of the *PLD*. (Table 23)

Table 22. The Patrologia Latina Database: Share (%) of Users for Key Using Departments				
Department	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Arts	0	6	0	2
Barnard College	NA	NA	4	0
English	33	16	13	NA
Arts & Sciences	NA	NA	NA	69
General Studies	0	6	0	2
History	33	26	35	NA
Columbia College	0	0	0	12
Total Users	6	31	23	49

Columbia Status	No. Of Users				Share (%) of Users			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Undergraduate Student	0	5	2	7	0	16	8	14
Graduate Student	2	10	9	13	33	32	35	26
Other Student	0	0	0	1	0	0	0	2
Assistant Professor	0	1	1	1	0	3	4	2
Associate Professor	0	0	0	2	0	0	0	4
Professor	0	0	1	4	0	0	4	8
Other User	4	15	13	21	67	48	50	44
TOTAL	6	31	26	49	100%	100%	100%	100%

User Portal Computers for Reference Book Use

A user location analysis provides evidence of both user cohort and location of use of the online books. User portal computers are categorized as follows in Table 24.

barnard - computers at Barnard College

cc - mainly computers in public labs

cpmc - computers in Columbia's medical center

cul - computers in the libraries, primarily on staff desks

cunix - all of the CNET terminal usage on campus

dialup - computers connected by dialup modem

english - computers in the English department

gsb - computers in the Graduate School of Business

law - computers in the Law School

pols - computers in the Political Science department

rhno - computers on the residence hall network

sipa - computers at the School of International and Public Affairs

ssw - computers at the School of Social Work

tc - computers at Teachers College

other - computers at all other Columbia locations

Table 24A. User Portal Groups for Reference Book Use: Distribution (%) of CWeb Hits

User Portal Group	Granger's Poetry					OED				
	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
barnard	1	27	9	*	7	*	1	1	2	4
cc	*	1	4	15	7	8	5	11	18	17
cpmc	2	*	2	1	3	5	1	2	2	2
cul	1	1	8	6	9	1	1	1	2	3
cunix	66	55	49	3	2	16	6	6	4	3
dialup	4	6	6	16	18	11	11	6	7	8
english	0	0	0	0	1	0	1	0	*	*
gsb	*	*	0	0	0	4	2	*	1	1
law	1	1	*	2	*	2	*	*	*	1
other	7	3	9	34	28	10	9	17	17	16
pols			0	0	0			*	0	*
rhno	8	2	8	22	16	39	62	53	45	41
sipa	0	0	0	0	*	*	*	1	*	*
ssw	1	*	0	*	1	2	*	*	*	*
tc	8	1	4	0	3	2	*	*	1	*
TOTAL HITS	1,729	3,935	1,234	364	366	5,593	12,594	14,795	23,370	28,739

These distributions were generally consistent with the other cohort indicators (Columbia status and department). For example, the residence hall network (rhno) was dominant, though declining, for *The OED*. Dial-up access from off campus increased for all of these groups of resources except *The OED*.

Table 24B. User Portal Groups for Reference Book Use: Distribution (%) of CWeb Hits									
User Portal Group	Garland Titles					Chadwyck-Healey Titles			
	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
barnard	3	6	13	9	9	0	4	2	4
cc	2	4	6	16	13	0	8	7	11
cpmc	5	6	2	8	1	0	2	2	*
cul	20	3	3	6	6	44	12	15	14
cunix	47	40	10	4	4	46	30	11	9
dialup	6	11	11	12	20	10	18	25	32
english	0	0	0	0	1	0	0	2	3
gsb	*	*	0	1	*	0	0	*	0
law	1	*	*	*	*	0	1	1	*
other	7	14	15	26	22	0	19	18	16
pols	0	0	0	0	0	0	0	0	0
rhno	6	13	32	12	18	0	5	11	9
sipa	0	*	0	*	0	0	0	2	*
ssw	5	2	4	2	1	0	*	3	*
tc	*	1	2	3	5	0	0	1	*
TOTAL HITS	1,030	865	295	468	686	72	1,058	1,178	2,365
* 0.5% or less.									

USE OF MONOGRAPHIC BOOKS

The Project included four collections of monographic (non-reference) books and texts. These were (1) *Past Masters* classical texts in social thought; (2) Columbia University Press contemporary monographs and collections of essays in social work, earth and environmental science, literary criticism, and political science/ international affairs; (3) Oxford University Press contemporary monographs and collections of essays in literary criticism and philosophy; and (4) Simon and Schuster Higher Education text books in political science/international affairs. These books came online from 1996 to 1999.

Use of Past Masters Texts

Until July 1996, ten *Past Masters* texts were available online; at that time another 44 came online. Use of these texts online declined from 1996 to 1997 (from 6,632 hits to 2,017 hits) before growing by 58 percent to 3,384 hits in 1998 (still only half the 1996

level). The first half of 1999 had one percent more hits than the equivalent period in 1997 and 58 percent more than in 1998. (Table 25)

Table 25. Past Masters On The Web, Total Hits					
Quarters	1995	1996	1997	1998	1999
1-2	NA	4,094	1,418	906	1,436
3-4	1,868	2,538	718	2,478	NA
Total		6,632	2,136	3,384	
Change From Previous Year		NA	-68%	+58%	+58%
Notes: Early data include a substantial share of Project staff hits until the texts were made public in July 1996.					

Columbia College was the department with the most users and hits for the *Past Masters* texts. Several of these texts were used in the Contemporary Civilization course, which all Columbia College students must take. SEAS undergraduates have a choice between this course and a literary humanities course. Some of these texts were assigned readings in several undergraduate courses; graduate courses in the political science department also assigned them. (Table 26)

Table 26. Past Masters: Share of Users & Hits for Key Using Departments								
Department	User Share (%)				Hits Share (%)			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Arts	2	6	2	1	1	5	*	2
Arts & Sciences	NA	NA	NA	17	NA	NA	NA	12
Barnard College	NA			12	NA			16
Biology	2	6	2	NA	3	6	3	NA
Columbia College	22	10	38	46	18	13	41	47
Computer Science	1	2	1	NA	*	1	20	NA
Engineering	10	5	15	8	23	3	7	11
History	4	6	4	NA	4	6	10	NA
Political Science	9	7	7	NA	11	11	2	NA
Total Users: Hits	144	125	178	217	710	860	2,467	1,399
* 0.5% or less								

Table 27. Past Masters: Distribution of Users By Columbia Status

Columbia Status	No. Of Users				User Share (%)				Hits Share (%)				
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Undergraduate Student	64	67	130	155	44	54	70	71	59	54	62	84	78
Graduate Student	13	7	18	16	9	6	10	7	5	7	4	2	3
Other Student	7	4	6	8	5	3	3	4	2	2	2	*	3
Assistant Professor	3	2	0	3	2	2	0	1	6	2	2	0	1
Associate Professor	0	0	2	2	0	0	1	1	0	0	0	*	1
Professor	1	3	3	3	1	2	2	1	6	*	1	1	1
Other User	56	42	27	30	39	34	14	14	29	34	30	12	13
TOTAL	144	125	186	217	100	100	100	100	146	710	860	2,477	1,399

Note: Undifferentiated Users include staff and others from Columbia-affiliated institutions not in the University database. * 0.5% or less

Undergraduates and *other* users were about equal in prominence and far more significant than graduate students, the next most important cohort as users of these texts. (Table 27) These counts are individuals who used one or more of these texts during the designated six-month period. During spring 1999, 217 individuals accounted for 1,399 hits or an average of 6.4 hits each during this six-month period.

Table 28. Key Past Masters Texts On The Web, Bi-Annual Hits								
Author	Title	Q3-4/ 96	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Total
Bacon	<i>New Organon</i>	407	576	81	139	1200	56	2,459
Burke	<i>Reflections Revolution in France</i>	21	19	28	10	24	350	452
Hamilton	<i>Federalist Papers</i>	47	42	49	62	45	52	297
Hobbes	<i>Leviathan</i>	248	44	103	31	351	46	823
Hume	<i>Enquiry - Principles of Morals</i>	37	128	5	242	21	239	672
Machiavelli	<i>The Prince</i>	280	148	164	81	263	81	1,017
Mill	<i>On Liberty</i>	32	70	10	62	23	244	441
Mill	<i>The Subjection of Women</i>	9	37	2	69	28	74	219
Total		1,081	1,064	442	696	1,955	1,142	6,380
Note: Texts with values for hits in bold were on reserve for one or more courses during the semester.								

Use was concentrated in a small subset of the *Past Masters* collection.²⁸ From the second half of 1996 through the first half of 1999, eight texts (15%) received 67 percent of the total hits. (Table 28) Each of these texts was on reserve for one or more courses during this period.

Use of Columbia University Press Books

Columbia University Press provided non-reference books in the fields of social work, natural science, literary criticism, and international affairs/political science. All of these books were published in the 1990s, most of them in 1994 or later. Table 29 tracks the number of hits on each book from the time it became part of the collection. It also gives the number of unique users for each book and the average number of hits per unique user

²⁸ This is typically the case with print library collections as well. Producers and purchasers of online books will want to consider whether online books should substitute for less-used titles or supplement the most used titles.

from July 1997 through June 1999 by half year. If the values are given in bold type, the book was on reserve for one or more courses during that period.

The first seven social work books came online from September 1996 to January 1997. Another five social work books came online in spring 1999; none of these new books had been used by July 1999. Four of the titles were on reserve for courses in spring 1997 and 1998, two in fall 1997, three in fall 1998, and two in spring 1999. From spring 1997 to spring 1999, hits on these books declined from 1,123 to 885 (down 21%). From fall 1997 to spring 1999, the number of unique users (sum of individuals using each title) increased from 137 to 152 (or from an average of 20 users per title to 22 users each). The mean number of hits per user remained steady at about six.

The earth and environmental science collection reached five titles in June 1997 and then remained stable through 1998. Hits on the collection increased from 277 in 1996-97 to 537 in 1998-99 (up 94%). The number of users increased 27 percent, from 71 in 1997-98 to 90 in 1998-99. The average number of hits per user increased from 3.9 to 6.0 (up 53%). Nine titles went online in spring 1999, eight of them in the March to June period. Only one of those nine books was used in spring 1999 and that book had one user who made two hits.²⁹

The political science/international relations collection gained three titles in March 1997, eight in October 1997, five in April 1998, and the final five in November-December 1998. Hits increased from 226 in 1997 to 1,677 in 1998. The number of users varied from 48 in fall 1997 to 318 in fall 1998 to 236 in spring 1999. Average hits per user were virtually unchanged at just under four. Since the advent of *Columbia International Affairs Online (CIAO)* in fall 1997, Columbia scholars have also had the option of reaching these books via that online service.³⁰

²⁹ The system for adding the online books to the Columbia catalog and to the LibraryWeb A-Z and subject listings did not operate smoothly in spring 1999; few of the new online books were added to these two sets of listings during that semester. Thus, scholars could not discover new books in the collection and review them by browsing on LibraryWeb. This, combined with the addition of many of these titles late in spring 1999, resulted in virtually no use of these new books online. This lack of use suggests that the Libraries' online catalog was not a common access point for the online books.

³⁰ We do not have data on the Columbia usage of the books via CIAO.

Table 29A. Columbia University Press Books: Number of Hits & Distinct Users

Title	Month Online	Hits							Distinct Users			
		Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Total	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Handbook of Gerontological Services</i>	9/96	141	79	198	25	41	79	563	22	9	21	8
<i>Philosophical Foundations of Social Work</i>	9/96	57	57	44	20	33	48	259	17	9	22	25
<i>Supervision In Social Work</i>	9/96	145	129	110	163	57	122	726	20	15	25	21
<i>Task Strategies:</i>	9/96	300	313	94	35	44	197	983	20	11	18	28
<i>Turning Promises into Performance</i>	9/96	55	39	27	91	32	30	274	9	7	12	9
<i>Mutual Aid Groups, Vulnerable Populations, & the Life Cycle</i>	11/96	100	426	208	134	117	313	1298	31	20	29	39
<i>Qualitative Research In Social Work</i>	1/97	38	80	170	39	172	96	595	18	16	41	22
<i>Illusion of Love: Battered Women</i>	2/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0
<i>Eating Disorders: New Directions</i>	4/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0
<i>From Father's Property to Children's Rights</i>	3/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0
<i>Experiencing HIV</i>	2/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0
<i>The Empowerment Tradition in American Social Work</i>	4/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0
Total Social Work		836	1,123	851	507	496	885	4,698	137	87	168	152
<i>Great Paleozoic Crisis:</i>	6/97	NA	70	12	9	254	76	421	4	2	8	5
<i>Invasions of the Land</i>	6/97	NA	0	10	6	10	2	28	5	2	7	2
<i>Ozone Discourses</i>	1/97	NA	9	23	4	31	13	80	7	3	7	8
<i>Seismosaurus</i>	10/96	92	69	69	71	64	39	404	20	25	28	9
<i>Sedimentographica</i>	1/97	NA	37	15	0	22	24	98	3	0	9	6
<i>Barriers & Bridges to the Renewal of</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1

Table 29A. Columbia University Press Books: Number of Hits & Distinct Users

Title	Month Online	Hits						Distinct Users						
		Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Total	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99		
<i>Ecosystems & Institutions</i>														
<i>Folding of Viscous Layers</i>	6/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Hypersea: Life on Land</i>	6/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Conserving Natural Value</i>	3/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Organic Matter:</i>	6/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Refiguring Life: Metaphors ...</i>	3/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Molecular Biology of Gaia</i>	6/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Sampling the Green World</i>	4/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Ecology, The Ascendant Perspective</i>	6/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
Total Natural Science		92	185	129	90	381	156	1,033	39	32	59	31		
<i>The Inhuman Race</i>	2/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>The Blue-Eyed Tarokaja</i>	2/99	NA	NA	NA	NA	NA	2	2	2	2	NA	NA	NA	1
<i>The Text & the Voice</i>	11/98	NA	NA	NA	NA	0	35	35	35	35	NA	NA	0	21
<i>Ecological Literary Criticism</i>	3/99	NA	NA	NA	NA	NA	3	3	3	3	NA	NA	NA	1
<i>Parables of Possibility</i>	3/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>At Emerson's Tomb</i>	3/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
<i>Extraordinary Bodies</i>	3/99	NA	NA	NA	NA	NA	0	0	0	0	NA	NA	NA	0
Total Literary Criticism		NA	NA	NA	NA	NA	40	40	40	40	NA	NA	NA	23
<i>China's Road to the Korean War</i>	4/98	NA	NA	NA	40	52	23	115	NA	5	7	5		
<i>China's Transition</i>	4/98	NA	NA	NA	107	84	62	253	NA	9	22	17		
<i>Cold War on the Periphery</i>	4/98	NA	NA	NA	0	27	5	32	NA	0	14	3		

Table 29A. Columbia University Press Books: Number of Hits & Distinct Users

Title	Month Online	Hits							Distinct Users				
		Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Total	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	
<i>Culture of National Security</i>	10/97	NA	NA	0	64	160	49	273	0	11	37	21	
<i>Deadly Imbalances</i>	12/98	NA	NA	NA	NA	0	12	12	NA	NA	0	7	
<i>Dialogues in Arab Politics</i>	11/98	NA	NA	NA	NA	0	57	57	NA	NA	0	8	
<i>Gender in International Relations</i>	11/96	17	37	77	11	293	25	460	20	5	51	10	
<i>Hemmed In:</i>	3/97	NA	5	28	33	25	28	119	12	11	13	13	
<i>International Relations Theory & the End of the Cold War</i>	10/97	NA	NA	3	41	22	38	104	1	8	11	14	
<i>Interpreting NAFTA:</i>	12/98	NA	NA	NA	NA	0	18	18	0	0	0	5	
<i>Jordan's Inter-Arab Relations:</i>	3/97	NA	1	6	6	10	7	30	2	2	6	5	
<i>The Liberal Moment</i>	10/97	NA	NA	0	48	16	44	108	0	9	10	18	
<i>Liberalization & Foreign Policy</i>	10/97	NA	NA	0	4	23	14	41	0	3	13	7	
<i>Logic of Anarchy</i>	11/97	NA	NA	0	41	25	20	86	0	7	9	5	
<i>Losing Control: Sovereignty...</i>	4/98	NA	NA	NA	35	103	60	198	NA	8	39	17	
<i>Managing Indonesia</i>	3/97	NA	7	62	22	32	14	137	13	3	6	7	
<i>Middle East Dilemma</i>	12/98	NA	NA	NA	NA	0	78	78	0	0	0	13	
<i>Parchment, Printing, & Hypermedia</i>	10/97	NA	NA	0	20	89	11	120	0	5	21	5	
<i>Rethinking Nationalism in the Arab Middle East</i>	10/97	NA	NA	0	8	50	43	101	0	4	9	15	
<i>Sex Among Allies</i>	10/97	NA	NA	0	25	58	23	106	0	10	12	7	
<i>Weapons, Culture, & Self-Interest:</i>	4/98	NA	NA	NA	16	87	247	350	NA	3	38	33	
<i>Women, the State, & Political Liberalization</i>	11/98	NA	NA	NA	NA	0	1	1	0	0	0	1	
<i>Consuming Subjects</i>	4/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0	

Table 29A. Columbia University Press Books: Number of Hits & Distinct Users

Title	Month Online	Hits							Distinct Users			
		Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Total	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Total Political Science & International Relations		17	50	176	521	1,156	879	2,798	48	103	318	236
Total CUP Books		945	1,358	1,156	1,118	2,033	1,960	8,570	224	222	545	442

Notes: N/A: Book was not online during this period. **Bold values** indicate semesters in which the book was on reserve for at least one course. Titles without annotation were available online before January 1997.

The most heavily used titles were required reading in courses. In fall 1998, *Gender in International Relations* was the most used title in this collection (with 51 users and 293 hits, up from 20 users and 77 hits a year earlier). This was also the online book with the most circulations in paper form in the second half of 1998 (54 circulations, down from 114 circulations a year earlier). The libraries own 18 copies of this book, 17 of them are on reserve in three different locations. This five chapter, 180 page book (published in 1992 and costing \$15.50 in paperback) was assigned reading (and on reserve) in one course³¹ with 247 students -- in two assignments totaling about 100 pages -- and in an unknown way for another course with 20 students. Thus, it appears that at most 105 (39%) of the students in these courses used library copies of this book, either the print or online versions, to do the assigned readings. If all of the 51 online users were from these courses (an unlikely scenario), the online version achieved 19 percent penetration of these students, up from 10 percent a year earlier. Use during the first half of 1998 was sharply different with only five users of the online version (and 11 hits) and two circulations of the print version. Ten scholars used this book online in spring 1999, with an average of 2.5 hits each.

Title	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Handbook of Gerontological Services</i>	9.0	2.8	2.0	9.9
<i>Philosophical Foundations of Social Work</i>	2.6	2.2	1.5	1.9
<i>Supervision In Social Work</i>	5.5	10.9	2.3	5.8
<i>Task Strategies:</i>	4.8	3.2	5.5	7.0
<i>Turning Promises into Performance</i>	3.0	13.0	2.7	3.3
<i>Mutual Aid Groups, Vulnerable Populations, & the Life Cycle</i>	6.7	6.7	4.0	8.0
<i>Qualitative Research In Social Work</i>	9.4	2.4	4.2	4.4
<i>Illusion of Love: Battered Women</i>	NA	NA	NA	NC
<i>Eating Disorders: New Directions</i>	NA	NA	NA	NC
<i>From Father's Property to Children's Rights</i>	NA	NA	NA	NC
<i>Experiencing HIV</i>	NA	NA	NA	NC
<i>The Empowerment Tradition in American Social Work</i>	NA	NA	NA	NC
Total Social Work	6.2	5.8	3.0	5.8
<i>Great Paleozoic Crisis:</i>	3.0	4.5	31.8	15.2
<i>Invasions of the Land</i>	2.0	3.0	1.4	1.0
<i>Ozone Discourses</i>	3.3	1.3	4.4	1.6

³¹ Our knowledge of the use of books in courses is usually based on their having been put on reserve in one of the libraries that has an online reserves catalog. These books may have been used in other courses for which the instructors did not do so.

Table 29B. Columbia University Press Books: Hits Per Distinct User				
Title	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Seismosaurus</i>	3.5	2.8	2.3	4.3
<i>Sedimentographica</i>	5.0	NC	2.4	4.0
<i>Barriers & Bridges to the Renewal of Ecosystems & Institutions</i>	NA	NA	NA	2.0
<i>Folding of Viscous Layers</i>	NA	NA	NA	NC
<i>Hypersea: Life on Land</i>	NA	NA	NA	NC
<i>Conserving Natural Value</i>	NA	NA	NA	NC
<i>Organic Matter: Productivity, ...</i>	NA	NA	NA	NC
<i>Refiguring Life: Metaphors ...</i>	NA	NA	NA	NC
<i>Molecular Biology of Gaia</i>	NA	NA	NA	NC
<i>Sampling the Green World</i>	NA	NA	NA	NC
<i>Ecology, The Ascendant Perspective</i>	NA	NA	NA	NC
Total Natural Science	3.3	2.8	6.5	5.0
<i>The Inhuman Race</i>	NA	NA	NA	NC
<i>The Blue-Eyed Tarokaja</i>	NA	NA	NA	2.0
<i>The Text and the Voice</i>	NA	NA	0	1.7
<i>Ecological Literary Criticism</i>	NA	NA	NA	3.0
<i>Parables of Possibility</i>	NA	NA	NA	NC
<i>At Emerson's Tomb</i>	NA	NA	NA	NC
<i>Extraordinary Bodies</i>	NA	NA	NA	NC
<i>Total Literary Criticism</i>	NA	NA	NA	1.7
<i>China's Road to the Korean War</i>	NA	8.0	7.4	4.6
<i>China's Transition</i>	NA	11.9	3.8	3.6
<i>Cold War on the Periphery</i>	NA	NA	1.9	1.7
<i>Culture of National Security</i>	NC	5.8	4.3	2.3
<i>Deadly Imbalances</i>	NA	NA	NC	1.7
<i>Dialogues in Arab Politics</i>	NA	NA	NC	7.1
<i>Gender in International Relations</i>	3.8	2.2	5.7	2.5
<i>Hemmed In:</i>	2.3	3.0	1.9	2.2
<i>International Relations Theory & the End of the Cold War</i>	3.0	5.1	2.0	2.7
<i>Interpreting NAFTA:</i>	NA	NA	NC	3.6
<i>Jordan's Inter-Arab Relations:</i>	3.0	3.0	1.7	1.4
<i>The Liberal Moment</i>	NC	5.3	1.6	2.4

Title	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Liberalization & Foreign Policy</i>	NC	1.3	1.8	2.0
<i>Logic of Anarchy</i>	NC	5.9	2.8	4.0
<i>Losing Control: Sovereignty ... Globalization</i>	NA	4.4	2.6	3.5
<i>Managing Indonesia</i>	4.8	7.3	5.3	2.0
<i>Middle East Dilemma</i>	NA	NA	NC	6.0
<i>Parchment, Printing, & Hypermedia</i>	NC	4.0	4.2	2.2
<i>Rethinking Nationalism in the Arab Middle East</i>	NC	2.0	5.5	2.9
<i>Sex Among Allies</i>	NC	2.5	4.8	3.3
<i>Weapons, Culture, & Self-Interest:</i>	NA	5.3	2.3	7.5
<i>Women, the State, & Political Liberalization</i>	NA	NA	NC	1.0
<i>Consuming Subjects</i>	NA	NA	NA	NC
Total Political Science-International Relations	3.7	5.1	3.6	3.7
Total CUP Books	5.2	5.0	3.7	4.4

Notes: NA: Book was not online during this period. NC: No use. **Bold values** indicate semesters in which the book was on reserve for at least one course.

Table 30 gives the departments with the greatest shares of the users of these books and of the hits on the books. Social Work was the dominant department, but as the political science and international affairs collection grew, the shares of their scholars (Political Science and SIPA, then Arts and Sciences) grew substantially.

Department	User Share (%)				Hits Share (%)			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
Social Work	38	25	17	21	56	40	19	33
Columbia College	6	4	14	20	5	4	10	11
Arts & Sciences	NA	NA	NA	19	NA	NA	NA	19
Political Science	7	14	24	NA	5	13	20	NA
Earth Sciences	2	0	1	NA	1	0	4	NA
General Studies	5	3	5	6	10	1	2	3
SIPA	NA	NA	NA	6	NA	NA	NA	8
Engineering	4	2	5	5	2	2	3	9
Medicine	2	4	5	5	1	13	2	3
Barnard College	NA	NA		9	NA	NA	4	8

Table 30. Columbia University Press Non-Reference Online Books: Users and Hits by Users' Departments

Department	User Share (%)				Hits Share (%)			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Teacher's College	NA	NA		3	NA	NA	5	1
Total Users - Hits	155	154	354	296	1,093	1,126	1,923	1,848
* 0.5% or less. NA: Data are not available.								

Table 31 gives the distribution of the users of these online books by their Columbia status. In spring 1999, undergraduate students and graduate students had similar shares of users (38% and 35% respectively). Graduate students were responsible for a much greater share of the hits (48%), indicating more intense use on average by graduate students.

Table 31. CU Press: Use of Non-Reference Online Books By Users' Columbia Status

Columbia Status	No. Of Users				User Share (%)				Hits Share (%)			
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Undergraduate Student	31	35	106	112	20	23	30	38	19	19	30	23
Graduate Student	58	50	85	105	37	32	24	35	56	42	33	48
Other Student	11	4	51	28	7	3	14	9	3	4	8	10
Assistant Professor	5	2	4	9	3	1	1	3	3	2	1	4
Associate Professor	2	0	3	1	1	0	1	*	1	0	*	*
Professor	4	5	5	4	3	3	1	1	2	4	2	1
Other User	44	58	100	39	28	45	28	13	16	30	26	14
Total Users - Hits	155	154	354	298	100	100	100	100	1,093	1,126	1,993	1,923

* 0.5 percent or less. Other User includes Instructor, Visiting Faculty, Staff, and Other.

Table 32 traces the circulation of the print copies of these titles in the Columbia University Libraries from the first half of 1994 to the last half of 1998. This analysis sought to determine (1) if there was a typical circulation pattern for these books; and (2) whether a book's circulation changed with the introduction of the online version. Column Two gives the publication year for the book; this was also the year in which the Libraries acquired the print version of the book normally. If the book was published during the period of this analysis, it could not have circulated earlier. The circulation figures are given in bold in periods for which we have information that a book was on reserve for one or more courses. Book circulation could change positively and negatively for many reasons; among them:

- The presence of the online version – positive or negative impact;
- Declining relevance of a book in a field in which timeliness is important – negative;
- New books in the field supplanting the earlier titles – negative; and
- Extended borrowing of a book by a scholar – negative.

There was a general decline in the average number of circulations per book per half year from 1994 to 1999. In the first half of 1994, the first data period, the measured collection contained 11 titles³² and these averaged 8.5 circulations. Two of the titles circulated over 30 times each; the other nine circulated from zero to nine times each (for an average of 2.4 times each). In the first half of 1999, the measured collection contained 55 titles, the most recent published in 1998. These 55 books averaged 2.6 circulations each in this period. The largest circulations were 20 and 27 times (one title each). Almost half (26 titles) did not circulate in this period.

³² This is the conservative estimate based on the assumption that books published in 1994 were not available in the first half of that year if the book did not circulate in that period.

Table 32. Circulation of CU Press Monographs in Columbia Libraries

	Pub Yr.	Q1-2/ 94	Q3-4/ 94	Q1-2/ 95	Q3-4/ 95	Q1-2/ 96	Q3-4/ 96	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Handbook of Gerontological Services</i>	90	3	6	0	18	8	7	1	6	0	0	0
<i>Supervision In Social Work</i>	92	39	3	47	4	30	4	12	2	11	1	7
<i>Gender in International Relations</i>	92	3	8	13	2	7	5	3	114	2	54	3
<i>Organic Matter: Productivity, ...</i>	92	0	0	0	0	0	0	0	0	0	0	0
<i>Task Strategies:</i>	92	0	15	8	0	15	18	4	2	0	4	0
<i>Logic of Anarchy: Neorealism</i>	93	3	18	5	20	7	7	9	5	0	5	5
<i>Hemmed In:</i>	93	33	11	20	21	4	19	13	7	3	16	3
<i>Managing Indonesia</i>	93	9	12	6	11	0	6	1	2	2	0	2
<i>Philosophical Foundations of Social Work</i>	93	0	3	2	1	1	1	0	1	5	0	2
<i>Great Paleozoic Crisis:</i>	93	1	0	0	0	1	0	0	0	0	0	0
<i>Turning Promises Into Performance</i>	93	3	3	7	3	6	1	1	1	1	0	0
<i>Mutual Aid Groups, Vulnerable Populations, & the Life Cycle</i>	94	0	19	17	16	7	9	12	19	6	5	20
<i>Empowerment Tradition in American Social Work</i>	94	0	1	32	11	8	4	8	2	8	1	4
<i>Qualitative Research In Social Work</i>	94	0	1	5	4	1	1	1	2	0	4	4
<i>Eating Disorders: New Directions</i>	94	0	0	8	5	7	5	1	7	4	2	2
<i>Ecological Literary Criticism</i>	94	0	0	2	3	5	5	1	3	1	1	1
<i>Jordan's Inter-Arab Relations</i>	94	0	0	1	4	9	8	8	0	0	0	1
<i>Ozone Discourses</i>	94	0	0	2	4	4	10	3	2	3	5	1
<i>China's Road to the Korean War</i>	94	0	0	1	4	1	1	2	2	0	0	0

Table 32. Circulation of CU Press Monographs in Columbia Libraries												
	Pub Yr.	Q1-2/ 94	Q3-4/ 94	Q1-2/ 95	Q3-4/ 95	Q1-2/ 96	Q3-4/ 96	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Conserving Natural Value</i>	94	0	0	0	0	1	0	1	0	0	0	0
<i>Folding of Viscous Layers:</i>	94	0	0	0	1	0	0	0	0	0	0	0
<i>From Father's Property to Children's Rights</i>	94	0	2	1	2	4	3	1	3	2	1	0
<i>Hypersera: Life on Land</i>	94	0	0	0	0	0	0	2	0	0	0	0
<i>Illusion of Love: Battered Women</i>	94	0	0	1	1	0	0	0	1	1	1	0
<i>Seismosaurus:</i>	94	0	1	0	0	0	0	0	0	0	0	0
<i>International Relations Theory & the End of the Cold War</i>	95	-	-	1	4	3	3	5	4	7	4	2
<i>Refiguring Life: Metaphors ...</i>	95	-	-	0	2	1	1	1	0	1	0	1
<i>Barriers & Bridges to the Renewal of Ecosystems & Institutions</i>	95	-	-	0	1	4	1	1	2	0	2	0
<i>Invasions of the Land</i>	95	-	-	0	0	1	0	0	0	0	0	0
<i>Parables of Possibility</i>	95	-	-	2	0	1	0	0	0	1	2	0
<i>Sedimentographica:</i>	95	-	-	0	0	0	1	1	0	0	0	0
<i>Culture of National Security</i>	96	-	-	-	-	0	1	23	14	38	43	27
<i>Losing Control: Sovereignty...</i>	96	-	-	-	-	0	0	7	1	4	8	9
<i>Blue-Eyed Tarakaja</i>	96	-	-	-	-	-	2	1	0	1	0	2
<i>Experiencing HIV</i>	96	-	-	-	-	0	0	0	2	1	0	0
<i>Molecular Biology of Gaia</i>	96	-	-	-	-	0	0	0	1	2	0	0
<i>Sampling the Green World</i>	96	-	-	-	-	-	-	-	-	-	-	0
<i>Liberal Moment:</i>	97	-	-	-	-	-	-	0	2	5	0	12

Table 32. Circulation of CU Press Monographs in Columbia Libraries

	Pub Yr.	Q1-2/ 94	Q3-4/ 94	Q1-2/ 95	Q3-4/ 95	Q1-2/ 96	Q3-4/ 96	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Sex Among Allies</i>	97	-	-	-	-	-	-	-	1	6	1	8
<i>China's Transition</i>	97	-	-	-	-	-	-	NA	NA	2	4	4
<i>Weapons, Culture, & Self-Interest:</i>	97	-	-	-	-	-	-	0	0	0	4	4
<i>Extraordinary Bodies</i>	97	-	-	-	-	-	-	2	6	2	3	2
<i>Inhuman Race</i>	97	-	-	-	-	-	-	2	1	5	3	2
<i>At Emerson's Tomb</i>	97	-	-	-	-	-	-	1	2	3	1	1
<i>Cold War on the Periphery:</i>	97	-	-	-	-	-	-	1	2	3	1	1
<i>Consuming Subjects</i>	97	-	-	-	-	-	-	1	3	0	0	0
<i>Ecology, The Ascendant Perspective</i>	97	-	-	-	-	-	-	0	0	0	0	0
<i>Liberalization & Foreign Policy</i>	97	-	-	-	-	-	-	0	0	2	1	0
<i>Parchment, Printing, & Hypermedia</i>	97	-	-	-	-	-	-	0	1	1	1	0
<i>Rethinking Nationalism in the Arab Middle East</i>	97	-	-	-	-	-	-	0	1	0	1	0
<i>Interpreting NAFTA:</i>	98	-	-	-	-	-	-	-	-	0	0	5
<i>Women, the State, & Political Liberalization</i>	98	-	-	-	-	-	-	-	-	0	2	5
<i>Deadly Imbalances:</i>	98	-	-	-	-	-	-	-	-	2	2	2
<i>Dialogues in Arab Politics:</i>	98	-	-	-	-	-	-	-	-	0	2	0
<i>Middle East Dilemma:</i>	98	-	-	-	-	-	-	-	-	-	-	0
Aver. Circulations/Available Book		8.5	4.1	6.7	4.6	4.4	3.4	3.2	4.7	2.7	3.5	2.6

Notes: The Libraries typically acquire books in the year in which they are published. Thus, that year is the first in which it could have circulated. “-” Indicates that the book was not yet available. **Bold** data indicate that the book was on reserve for one or more courses during

Table 32. Circulation of CU Press Monographs in Columbia Libraries

	Pub Yr.	Q1-2/ 94	Q3-4/ 94	Q1-2/ 95	Q3-4/ 95	Q1-2/ 96	Q3-4/ 96	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
that period.												

Use of Oxford University Press Books

As of June 1999, the online books collection included 19 titles in literary criticism and 32 titles in philosophy from Oxford University Press. Six of the literary criticism titles and 13 of the philosophy titles came online in 1999. Four of the titles in each category came online in fall 1998. Thus, over half of the OUP titles came online within the last year of this study. Table 33 tracks the numbers of hits, unique users, and average hits per unique user for each half year from the time each of these books became part of the online collection.

None of the OUP books was on reserve for a course at any point during the study so required reading for a course was not a likely reason for use. In general, scholars used a book online more in the first full half-year in which it was online than in subsequent periods. The following table summarizes the data on usage of these books. These data omit books that were added to the collection late in a semester. While, by print standards, a fair number of individuals looked at these books, their use was modest – averaging less than three hits per user typically.

	Literary Criticism			Philosophy		
	Distinct Users		Hits/ User	Distinct Users		Hits/ User
	Range	Mean		Range	Mean	
Fall 1997	4 – 13	6.3	2.4	1 – 17	8.6	2.3
Spring 1998	0 – 12	4.8	2.6	1 – 17	6.8	3.4
Fall 1998	0 - 15	5.5	2.0	0 – 16	8.4	2.7
Spring 1999	0 – 15	4.7	1.9	0 – 15	5.1	2.7

Table 33A. Oxford University Press Monographs: Hits & Distinct Users

Title	Month Online	Hits										Distinct Users				
		Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Total	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99				
<i>Novel & the Globalization of Culture</i>	11/96	11	15	40	42	28	25	161	13	12	15	15				
<i>A Necessary Madness: Humor ...</i>	4/98	NA	NA	NA	2	11	26	39	NA	1	6	10				
<i>Modernism & Theater of Censorship</i>	6/97	0	3	10	0	9	19	41	5	0	3	8				
<i>Psychoanalysis & Black Novels</i>	11/98	NA	NA	NA	0	0	16	16	NA	0	0	8				
<i>Living in Time</i>	10/98	NA	NA	NA	0	0	12	12	NA	0	0	8				
<i>Virtues of the Vicious</i>	10/98	NA	NA	NA	0	0	14	14	NA	0	0	6				
<i>Majestic Indolence:</i>	1/97	0	23	12	11	23	7	76	6	5	8	5				
<i>Future of Southern Letters</i>	4/98	NA	NA	NA	0	10	6	16	NA	0	6	4				
<i>Impolitic Bodies</i>	10/98	0	0	0	0	9	5	14	0	0	5	4				
<i>"Literary Man ": Mark Twain...</i>	11/96	3	19	11	6	17	4	60	4	3	7	4				
<i>Children's Literature & Critical Theory</i>	11/96	6	16	5	8	25	5	65	4	3	11	3				
<i>Poetics of Fascism</i>	10/96	2	14	12	10	15	4	57	6	6	11	3				
<i>Postcards from the Trenches</i>	1/99	NA	NA	NA	NA	NA	7	7	NA	NA	NA	2				
<i>Race, Rape & Lynching</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1				
<i>Scenes of Subjection: Terror, Slavery...</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1				
<i>W.E.B. du Bois & American Political Thought</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1				
<i>Romances of the Republic</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1				
<i>Framing Pieces: Designs of the Glass</i>	4/98	NA	NA	NA	0	0	0	0	NA	0	0	0				
Total Literary Criticism		22	90	90	79	147	158	586	38	30	72	84				
<i>Bangs, Crunches, Whimpers, & Shrieks</i>	10/96	47	46	33	71	31	43	271	12	17	14	15				
<i>Other Minds: Critical Essays</i>	10/96	34	79	40	50	48	38	289	17	10	16	15				

Table 33A. Oxford University Press Monographs: Hits & Distinct Users

Title	Month Online	Hits										Distinct Users				
		Q3-4/ 96	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Total	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99				
<i>Real Rights</i>	10/96	11	12	14	6	10	21	74	4	6	8	12				
<i>Moral Knowledge & Ethical Character</i>	4/98	NA	NA	NA	10	58	29	97	NA	5	15	11				
<i>Morality of Nationalism</i>	4/98	NA	NA	NA	4	31	26	61	NA	1	14	11				
<i>Philosophy of Mathematics & Mathematical Practice in 17th Century</i>	10/96	13	17	7	36	23	22	118	4	7	11	9				
<i>Logic of Reliable Inquiry</i>	10/96	13	9	25	33	13	18	111	5	7	9	9				
<i>Self Expressions</i>	10/96	29	62	26	18	45	37	217	10	9	11	8				
<i>Causation & Persistence</i>	5/98	NA	NA	NA	0	23	28	61	NA	0	8	8				
<i>Free Public Reason: ...</i>	10/96	17	44	2	31	16	11	121	1	3	7	6				
<i>Morality, Normativity, & Society</i>	10/96	22	54	14	9	37	10	146	9	6	8	6				
<i>Nietzche's System</i>	10/96	14	23	28	13	20	26	124	14	6	10	5				
<i>Freedom & Moral Sentiment:</i>	10/96	7	4	5	3	6	33	58	4	1	3	4				
<i>Law & Truth</i>	11/96	9	19	20	10	5	22	85	12	5	4	4				
<i>Century of Taste</i>	10/98	NA	NA	NA	NA	0	19	19	NA	NA	0	4				
<i>Practical Ethics</i>	12/98	NA	NA	NA	NA	NA	11	11	NA	NA	NA	4				
<i>Studies in Scientific Realism</i>	10/98	NA	NA	NA	NA	0	6	6	NA	NA	0	3				
<i>Autonomous Agents: ...</i>	10/96	10	30	19	7	22	4	92	11	5	5	3				
<i>Loose Women, Lecherous Men:</i>	1/99	NA	NA	NA	NA	NA	5	5	NA	NA	NA	2				
<i>The Golden Rule</i>	1/99	NA	NA	NA	NA	NA	5	5	NA	NA	NA	2				
<i>Novel Defense of Scientific Realism</i>	12/98	NA	NA	NA	NA	0	3	3	NA	NA	0	2				
<i>Causality & Explanation</i>	11/98	NA	NA	NA	NA	0	2	2	NA	NA	0	2				
<i>Making Mortal Choices:</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1				

Table 33A. Oxford University Press Monographs: Hits & Distinct Users

Title	Month Online	Hits							Distinct Users			
		Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Total	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Moral Appraisability:</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1
<i>The Human Animal:</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1
<i>Deconstructing the Mind</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1
<i>Leibniz & Clarke: A Study...</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1
<i>Problems of Vision</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1
<i>On God & Dogs</i>	1/99	NA	NA	NA	NA	NA	2	2	NA	NA	NA	1
<i>Emotion and the Arts</i>	4/98	NA	NA	NA	0	0	0	0	NA	0	0	0
<i>Innate Capacity</i>	6/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0
<i>The Last Word</i>	1/99	NA	NA	NA	NA	NA	0	0	NA	NA	NA	0
Total Philosophy		226	399	233	301	388	433	1547	103	88	143	162
Total OUP Books		248	489	323	380	535	606	2581	141	118	215	246

Table 33B. Oxford University Press Monographs: Hits Per Distinct User

Title	Month Online	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Novel & the Globalization of Culture</i>	11/96	3.1	3.5	1.9	1.7
<i>Majestic Indolence: ...</i>	1/97	2.0	2.2	2.9	1.4
<i>Children's Literature & Critical Theory</i>	11/96	1.2	2.7	2.3	1.7
<i>"Littery Man": Mark Twain...</i>	11/96	2.8	2.0	2.4	1.0
<i>Poetics of Fascism</i>	10/96	2.0	1.7	1.4	1.3
<i>Modernism & Theater of Censorship</i>	6/97	2.0	NA	3.0	2.4
<i>Necessary Madness: ...</i>	4/98	NA	2.0	1.8	2.6
<i>Future of Southern Letters</i>	4/98	NA	NA	1.7	1.5
<i>Impolitic Bodies</i>	10/98	NA	NA	1.8	1.2
<i>Framing Pieces: Designs ...</i>	4/98	NA	NA	NA	NC
<i>Living in Time</i>	10/98	NA	NA	NA	1.5
<i>Psychoanalysis & Black Novels</i>	11/98	NA	NA	NA	2.0
<i>Virtues of the Vicious</i>	10/98	NA	NA	NA	2.3
<i>Postcards from the Trenches</i>	1/99	NA	NA	NA	3.5
<i>Race, Rape & Lynching</i>	1/99	NA	NA	NA	2.0
<i>Scenes of Subjection: Terror, Slavery...</i>	1/99	NA	NA	NA	2.0
<i>W.E.B. du Bois & American Political Thought</i>	1/99	NA	NA	NA	2.0
<i>Romances of the Republic</i>	1/99	NA	NA	NA	2.0
Total Literary Criticism		2.4	2.6	2.0	1.4
<i>Other Minds: Critical Essays</i>	10/96	2.4	5.0	3.0	2.5
<i>Bangs, Crunches, Whimpers, & Shrieks</i>	10/96	2.8	4.2	2.2	2.9
<i>Self Expressions</i>	10/96	2.6	2.0	4.1	4.6
<i>Morality, Normativity, & Society</i>	10/96	1.6	1.5	4.6	1.7
<i>Free Public Reason: ...</i>	10/96	2.0	10.3	2.3	1.8
<i>Nietzsche's System</i>	10/96	2.0	2.2	2.0	5.2
<i>Philosophy of Mathematics & Mathematical Practice in the 17th Century</i>	10/96	1.8	5.1	2.1	2.4
<i>Logic of Reliable Inquiry</i>	10/96	5.0	4.7	1.4	2.0
<i>Autonomous Agents: ...</i>	10/96	1.7	1.4	4.4	1.3
<i>Moral Knowledge & Ethical Character</i>	4/98	NA	2.0	3.9	2.6
<i>Emotion and the Arts</i>	4/98	NA	NC	NC	NC
<i>Law and Truth</i>	11/96	1.7	2.0	1.3	5.5
<i>Real Rights</i>	10/96	3.5	1.0	1.3	1.8
<i>Morality of Nationalism</i>	4/98	NA	4.0	2.2	2.4
<i>Freedom & Moral Sentiment:</i>	10/96	1.2	3.0	2.0	8.2
<i>Causation & Persistence</i>	5/98	NA	NC	2.9	3.5

Table 33B. Oxford University Press Monographs: Hits Per Distinct User					
Title	Month Online	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Causality & Explanation</i>	11/98	NA	NA	NC	1.0
<i>Century of Taste</i>	10/98	NA	NA	NC	4.8
<i>Novel Defense of Scientific Realism</i>	12/98	NA	NA	NC	1.5
<i>Studies in Scientific Realism</i>	10/98	NA	NA	NC	2.0
<i>Making Mortal Choices:</i>	1/99	NA	NA	NA	2.0
<i>Innate Capacity</i>	6/99	NA	NA	NA	NC
<i>Moral Appraisability: Puzzles, Proposals</i>	1/99	NA	NA	NA	2.0
<i>Loose Women, Lecherous Men:</i>	1/99	NA	NA	NA	2.5
<i>The Last Word</i>	1/99	NA	NA	NA	NC
<i>The Human Animal: Personal Identity...</i>	1/99	NA	NA	NA	2.0
<i>Practical Ethics</i>	?	NA	NA	NA	2.8
<i>Deconstructing the Mind</i>	1/99	NA	NA	NA	2.0
<i>Leibniz & Clarke: A Study...</i>	1/99	NA	NA	NA	2.0
<i>Problems of Vision</i>	1/99	NA	NA	NA	2.0
<i>The Golden Rule</i>	1/99	NA	NA	NA	2.5
<i>On God & Dogs</i>	1/99	NA	NA	NA	2.0
Total Philosophy		2.3	3.4	2.7	2.7
Total OUP Books		2.3	3.2	2.5	2.5

In spring 1999, Arts and Sciences and Columbia College were the homes of the most users. (Table 34) Undergraduate students and *other* were the cohorts with the greatest numbers of users of these online books. (Table 35)

Table 34. Oxford University Press: Departments with Greatest Use of Online Books

Department	User Share (%)				Hits Share (%)				
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Columbia College	19	12	16	19	3	26	15	8	28
Engineering	8	7	10	10	9	5	6	9	4
Arts & Sciences	NA	NA	NA	28	NA	NA	NA	NA	26
English	6	2	4	NA	0	6	1	7	NA
General Studies	6	2	6	7	3	5	1	5	5
Social Work	4	6	4	4	16	3	2	2	4
Political Science	4	8	10	NA	27	6	5	8	NA
Medicine	1	3	7	9	0	*	24	21	5
Barnard College	NA	NA	NA	10	NA	NA	NA	4	16
Total Users - Hits	110	90	131	14	127	325	386	533	598
Note: * 0.5% or less.									

Table 35. Oxford University Press: Distribution of Use of Online Books by User's Columbia Status

Columbia Status	No. Of Users				User Share (%)				Hits Share (%)				
	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
Undergraduate Student	38	30	57	59	34	33	40	40	24	36	31	35	48
Graduate Student	16	9	29	27	14	10	20	18	30	12	5	19	21
Other Student	4	7	12	10	4	8	8	7	20	6	4	5	6
Assistant Professor	1	2	1	4	1	2	1	3	0	1	2	*	2
Associate Professor	2	0	1	0	2	0	1	0	0	1	0	*	0
Professor	0	3	1	1	0	3	1	1	0	0	2	1	*
Other User	49	39	41	45	44	43	29	31	25	45	57	38	23
Total Users or Hits	110	90	142	146	100	100	100	100	127	325	386	551	598

* 0.5% or less. Other User includes Staff, Instructors & Visiting Faculty, and Other.

Table 36 traces the circulation of these titles in their print form for the four years from the first half of 1995 to the first half of 1999. This analysis sought to determine (1) the typical circulation pattern for these books, if they had one, and (2) whether circulation had changed with the introduction of the online versions. The second column of this table gives the book's publication year. Typically, this was also the year in which the Libraries acquired the print version. All of these books were published in or after 1995, so they could not have circulated earlier.

	Pub Yr	Q1-2/95	Q3-4/95	Q1-2/96	Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Novel & Globalization of Culture</i>	95	0	1	3	2	1	1	2	2	1
<i>Autonomous Agents</i>	95	0	2	1	2	1	3	1	0	0
<i>Bangs, Crunches, Whispers & Shrieks</i>	95	0	0	0	0	0	0	1	0	0
<i>Children's Literature & Critical Theory</i>	95	0	0	0	0	1	0	1	0	0
<i>Freedom & Moral Sentiment</i>	95	0	0	1	1	1	0	1	0	0
<i>Majestic Indolence</i>	95	0	1	0	0	0	0	0	0	0
<i>Morality, Normativity & Society</i>	95	0	1	0	2	1	0	0	0	0
<i>Other Minds</i>	95	0	1	0	0	2	1	0	1	0
<i>Poetics of Fascism</i>	95	0	0	3	0	0	1	0	1	0
<i>Real Rights</i>	95	0	0	0	0	0	1	0	0	0
<i>Race, Rape & Lynching</i>	96	-	-	0	1	5	2	2	1	2
<i>"Littery Man. "</i>	96	-	-	0	1	0	0	0	0	1
<i>Deconstructing the Mind</i>	96	-	-	0	2	0	0	2	0	1
<i>Century of Taste</i>	96	-	-	0	0	0	0	0	0	0
<i>Golden Rule</i>	96	-	-	0	0	1	0	0	0	1
<i>Modernism & the Theater of Censorship</i>	96	-	-	-	1	4	1	0	0	1
<i>Nietzsche's System</i>	96	-	-	1	2	2	0	3	1	1
<i>Philosophy of Mathematics & Math. Practice..17th Century</i>	96	-	-	0	0	0	0	0	0	1
<i>Framing Pieces</i>	96	-	-	0	0	1	0	2	0	0
<i>Free Public Reason:</i>	96	-	-	0	0	0	1	0	0	0
<i>Future of Southern Letters</i>	96	-	-	0	0	0	0	0	0	0
<i>Law & Truth:</i>	96	-	-	0	1	0	1	0	0	0
<i>Logic Of Reliable Inquiry</i>	96	-	-	0	0	0	0	0	0	0
<i>Postcards from the Trenches</i>	96	-	-	0	1	0	1	0	0	0
<i>Romances of the Republic</i>	96	-	-	0	0	3	1	0	1	0

	Pub Yr	Q1-2/95	Q3-4/95	Q1-2/96	Q3-4/96	Q1-2/97	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
<i>Scenes of Subjection</i>	96	-	-	0	0	0	2	4	6	0
<i>Self Expressions</i>	96	-	-	0	3	0	0	1	1	0
<i>W.E.B. Du Bois & American Political Thought</i>	97	-	-	-	-	0	0	7	3	4
<i>Morality of Nationalism</i>	97	-	-	-	-	0	0	0	1	2
<i>Human Animal:</i>	97	-	-	-	-	0	1	1	0	1
<i>Loose Women, Lecherous Men</i>	97	-	-	-	-	0	0	0	0	1
<i>Causation & Persistence:</i>	97	-	-	-	-	0	0	2	0	0
<i>Emotion and the Arts</i>	97	-	-	-	-	0	0	0	2	0
<i>Innate Capacity</i>	97	-	-	-	-	0	0	0	1	0
<i>Last Word</i>	97	-	-	-	-	1	2	1	0	0
<i>Leibniz & Clarke</i>	97	-	-	-	-	0	0	0	0	0
<i>Making Mortal Choices</i>	97	-	-	-	-	0	0	0	0	0
<i>Moral Knowledge & Ethical Character</i>	97	-	-	-	-	0	0	0	0	0
<i>Necessary Madness</i>	97	-	-	-	-	0	0	0	1	0
<i>Novel Defense of Scientific Realism</i>	97	-	-	-	-	0	0	0	0	0
<i>Problems of Vision</i>	97	-	-	-	-	0	1	0	0	0
<i>Virtues of the Vicious</i>	98	-	-	-	-	-	-	1	2	5
<i>Psychoanalysis & Black Novels</i>	98	-	-	-	-	-	-	0	2	2
<i>Causality & Explanation</i>	98	-	-	-	-	-	-	1	0	1
<i>Impolitic Bodies</i>	98	-	-	-	-	-	-	1	1	0
<i>Living In Time</i>	98	-	-	-	-	-	-	0	0	0
<i>Moral Appraisability</i>	98	-	-	-	-	-	-	0	0	0
<i>On God & Dogs</i>	98	-	-	-	-	-	-	0	0	0
<i>Practical Ethics</i>	98	-	-	-	-	-	-	0	1	0
<i>Studies in Scientific Realism</i>	98	-	-	-	-	-	-	0	0	0

Note: The Libraries typically acquire a book in the year in which it was published. Thus, that year was the first in which it could have circulated. Italicized circulation data indicate the period in which this book went online.

Over this 4.5-year period, the maximum number of print circulations was 14 (for one title), with zero to four circulations being more typical. Eleven of the 50 titles did not circulate at all in this period; eight of those were published in or after 1997 (23 books in the collection were published in that period). Overall, the titles averaged 1.1 print circulations per year of availability.

These data suggest that the online books received more exposure (if not necessarily pages read, hours of use, or the like) than their print counterparts. In addition, it does not appear that the online availability of these books had a meaningful impact on their print circulation, as it did not vary systematically over time.

Summary Data on Online & Print Circulation of Non-Reference Books

Table 37 summarizes print and online circulation data by title for the 105 contemporary, non-reference books in the online collection as of June 1999.

Included in this table, along with the Columbia University Press and Oxford University Press books, are two titles from Simon and Schuster Higher Education (*Politics and the Media* and *International Politics*) that came online in spring 1997. In all three semesters, courses assigned *Politics and the Media* (Davis). In fall 1997 through spring 1999, 104 users executed 1,100 hits on the online version, for an average of 10.6 hits per user per semester. Over the same period the print copies, which were on reserve, circulated 1,361 times, far more often than any other book in the collection.

International Politics: An Introduction (Holsti) was on reserve for one or more courses from spring 1998 to spring 1999. In fall 1997 through spring 1999, 77 users executed 305 hits on the online version, for an average of four hits per user. The print copies (which were on reserve) circulated 89 times (68 of those circulations occurred in spring 1998).

As of June 1999, 83 of these 105 books (79%) had been used by at least one person in the online form. Twenty of the 22 titles that had not been used at all became available online in 1999.³³ The 71 titles online at the end of 1998 averaged 41 hits and 10 users (or 4.1 hits per user) during the first six months of 1999. While four hits over six months may seem modest, it could take a user to the table of contents of a book and then to as many as three chapters or other sections. This was sufficient to complete many reading assignments.

In 1998 these 105 titles circulated a total of 654 times in print form, or an average of 6.2 times. However, one-third did not circulate at all in print form in 1998. Only ten titles had ten or more circulations each in 1998, averaging 48 circulations each. These ten books accounted for 84 percent of the total circulations for this group of books. The

³³ As noted earlier, few of these titles were added to the A-Z and subject category listings on Columbia's Library Web. Thus, the only access system for most was the online catalog. The 35 titles that came online during spring 1999 averaged 1.2 hits and 0.5 users (or 2.4 hits per user) during that six-month period, but 58 percent of these titles did not circulate at all.

other 59 titles that circulated in 1998 averaged 2.9 circulations.

Table 37A. Online Use of Contemporary Online Non-Reference Books

Title	Hits on Online Books				Distinct Online Users				Hits/Distinct User				
	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Manual Aid Groups, Vulnerable Populations and the Life Cycle</i>	426	208	134	117	313	31	20	29	39	6.7	6.7	4.0	8.0
<i>International Politics</i>	NA	30	22	123	130	12	6	25	34	2.5	3.7	4.9	3.8
<i>Weapons, Culture, & Self-Interest</i>	NA	NA	16	87	247	NA	3	38	33	NA	5.3	2.3	7.5
<i>Task Strategies:</i>	313	94	35	44	197	20	11	18	28	4.7	3.2	2.4	7.0
<i>Politics and the Media</i>	13	173	427	247	253	17	41	21	25	10.2	10.4	11.8	10.0
<i>Philosophical Foundations of Social Work</i>	57	44	20	33	48	17	9	22	25	2.6	2.2	1.5	1.9
<i>Qualitative Research in Social Work</i>	80	170	39	172	96	18	16	41	22	9.4	2.4	4.2	4.4
<i>Supervision in Social Work</i>	129	110	163	57	122	20	15	25	21	5.5	10.9	2.3	5.8
<i>Culture of National Security</i>	NA	0	64	160	49	0	11	37	21	NA	5.8	4.3	2.3
<i>The Text and the Voice</i>	NA	NA	NA	0	35	NA	NA	0	21	NA	NA	NC	1.7
<i>Liberal Moment</i>	NA	0	48	16	44	0	9	10	18	NA	5.3	1.6	2.4
<i>China's Transition</i>	NA	NA	107	84	62	NA	9	22	17	NA	11.9	3.8	3.6
<i>Losing Control</i>	NA	NA	35	103	60	NA	8	39	17	NA	4.4	2.6	3.5
<i>Bangs, Crunches, Whimpers, & Shrieks</i>	46	33	71	31	43	12	17	14	15	2.8	4.2	2.2	2.9
<i>Rethinking Nationalism In Arab Middle East</i>	NA	0	8	50	43	0	4	9	15	NA	2.0	5.6	2.9
<i>Other Minds:</i>	79	40	50	48	38	17	10	16	15	2.4	5.0	3.0	2.5
<i>Novel and Globalization of Culture</i>	15	40	42	28	25	13	12	15	15	3.1	3.5	1.9	1.7
<i>International Relations Theory & the End of the Cold War</i>	NA	3	41	22	38	1	8	11	14	3.0	5.1	2.0	2.7

Table 37A. Online Use of Contemporary Online Non-Reference Books

Title	Hits on Online Books					Distinct Online Users					Hits/Distinct User				
	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q3-4/ 98	Q1-2/ 99	
<i>Middle East Dilemma</i>	NA	NA	NA	0	78	NA	NA	0	13	NA	NA	NA	NC	6.0	
<i>Hemmed In:</i>	5	28	33	25	28	12	11	13	13	2.3	3.0	1.9	2.2	2.2	
<i>Real Rights</i>	12	14	6	10	21	4	6	8	12	3.5	1.0	1.3	1.8	1.8	
<i>Moral Knowledge & Ethical Character</i>	NA	NA	10	58	29	NA	5	15	11	NA	2.0	3.9	2.6	2.6	
<i>Morality of Nationalism</i>	NA	NA	4	31	26	NA	1	14	11	NA	4.0	2.2	2.4	2.4	
<i>Necessary Madness</i>	NA	NA	2	11	26	NA	1	6	10	NA	2.0	1.8	2.6	2.6	
<i>Gender in International Relations</i>	37	77	11	293	25	20	5	51	10	3.8	2.2	5.7	2.5	2.5	
<i>Seismosaurus</i>	69	69	71	64	39	20	25	28	9	3.4	2.8	2.3	4.3	4.3	
<i>Turning Promises into Performance</i>	39	27	91	32	30	9	7	12	9	3.0	13.0	2.7	3.3	3.3	
<i>Philosophy of Mathematics & Math. Practice in the 17th Century</i>	17	7	36	23	22	4	7	11	9	1.8	5.1	2.1	2.4	2.4	
<i>Logic of Reliable Inquiry</i>	9	25	33	13	18	5	7	9	9	5.0	4.7	1.4	2.0	2.0	
<i>Handbook of Gerontological Services</i>	79	198	25	41	79	22	9	21	8	9.0	2.8	2.0	9.9	9.9	
<i>Dialogues in Arab Politics</i>	NA	NA	NA	0	57	NA	NA	0	8	NA	NA	NC	7.1	7.1	
<i>Self Expressions: Mind, Morals</i>	62	26	18	45	37	10	9	11	8	2.6	2.0	4.1	4.6	4.6	
<i>Causation and Persistence</i>	NA	NA	0	23	28	NA	0	8	8	NC	NC	2.9	3.5	3.5	
<i>Modernism & Theater of Censorship</i>	3	10	0	9	19	5	0	3	8	2.0	NA	3.0	2.4	2.4	
<i>Psychoanalysis and Black Novels</i>	NA	NA	0	0	16	NA	0	0	8	NA	NC	NC	2.0	2.0	
<i>Ozone Discourses</i>	9	23	4	31	13	7	3	7	8	3.3	1.3	4.4	1.6	1.6	
<i>Living In Time</i>	NA	NA	0	0	12	NA	0	0	8	NA	NC	NC	1.5	1.5	
<i>Sex Among Allies:</i>	NA	0	25	58	23	0	10	12	7	NA	2.5	4.8	3.3	3.3	
<i>Liberalization and Foreign Policy</i>	NA	0	4	23	14	0	3	13	7	NA	1.3	1.8	2.0	2.0	

Table 37A. Online Use of Contemporary Online Non-Reference Books

Title	Hits on Online Books					Distinct Online Users					Hits/Distinct User				
	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99		
<i>Managing Indonesia</i>	7	62	22	32	14	13	3	6	7	4.8	7.3	5.3	2.0		
<i>Deadly Imbalances</i>	NA	NA	NA	0	12	NA	NA	0	7	NA	NA	NC	1.7		
<i>Sedimentographica</i>	37	15	0	22	24	3	0	9	6	5.0	NA	2.4	4.0		
<i>Virtues of the Vicious</i>	NA	NA	0	0	14	NA	0	0	6	NA	NC	NC	2.3		
<i>Free Public Reason</i>	44	2	31	16	11	1	3	7	6	2.0	10.3	2.3	1.8		
<i>Morality, Normativity, and Society</i>	54	14	9	37	10	9	6	8	6	1.6	1.5	4.6	1.7		
<i>Great Paleozoic Crisis</i>	70	12	9	254	76	4	2	8	5	3.0	4.5	31.8	15.2		
<i>Nietzsche's System</i>	23	28	13	20	26	14	6	10	5	2.0	2.2	2.0	5.2		
<i>China's Road to the Korean War</i>	NA	NA	40	52	23	NA	5	7	5	NA	8.0	7.4	4.6		
<i>Logic of Anarchy</i>	NA	0	41	25	20	0	7	9	5	NA	5.9	2.8	4.0		
<i>Interpreting NAFTA</i>	NA	NA	NA	0	18	NA	NA	0	5	NA	NA	NC	3.6		
<i>Parchment, Printing, and Hypermedia</i>	NA	0	20	89	11	0	5	21	5	NA	4.0	4.2	2.2		
<i>Jordan's Inter-Arab Relations</i>	1	6	6	10	7	2	2	6	5	3.0	3.0	1.7	1.4		
<i>Majestic Indolence</i>	23	12	11	23	7	6	5	8	5	2.0	2.2	2.9	1.4		
<i>Freedom & Moral Sentiment:</i>	4	5	3	6	33	4	1	3	4	1.2	3.0	2.0	8.2		
<i>Law and Truth</i>	19	20	10	5	22	12	5	4	4	1.7	2.0	1.3	5.5		
<i>Century of Taste</i>	NA	NA	NA	0	19	NA	NA	0	4	NA	NA	NC	4.8		
<i>Future of Southern Letters</i>	NA	NA	0	10	6	NA	0	6	4	NA	NA	1.7	1.5		
<i>Impolitic Bodies</i>	NA	NA	NA	9	5	NA	NA	5	4	NA	NA	1.8	1.2		
<i>"Literary Man.:"</i>	19	11	6	17	4	4	3	7	4	2.8	2.0	2.4	1.0		
<i>Studies in Scientific Realism</i>	NA	NA	0	0	6	NA	0	0	3	NA	NC	NC	2.0		

Table 37A. Online Use of Contemporary Online Non-Reference Books

Title	Hits on Online Books				Distinct Online Users				Hits/Distinct User				
	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Children's Literature & Critical Theory</i>	16	5	8	25	5	4	3	11	3	1.2	2.7	2.3	1.7
<i>Cold War on the Periphery</i>	NA	NA	0	27	5	NA	0	14	3	NA	NA	1.9	1.7
<i>Autonomous Agents</i>	30	19	7	22	4	11	5	5	3	1.7	1.4	4.4	1.3
<i>Poetics of Fascism</i>	14	12	10	15	4	6	6	11	3	2.0	1.7	1.4	1.3
<i>Postcards from the Trenches</i>	NA	NA	NA	NA	7	NA	NA	NA	2	NA	NA	NA	3.5
<i>Golden Rule</i>	NA	NA	NA	NA	5	NA	NA	NA	2	NA	NA	NA	2.5
<i>Loose Women, Lecherous Men</i>	NA	NA	NA	NA	5	NA	NA	NA	2	NA	NA	NA	2.5
<i>Novel Defense of Scientific Realism</i>	NA	NA	NA	0	3	NA	NA	0	2	NA	NA	NC	1.5
<i>Causality and Explanation</i>	NA	NA	0	0	2	NA	0	0	2	NA	NC	NC	1.0
<i>Invasions of the Land</i>	NA	10	6	10	2	5	2	7	2	2.0	3.0	1.4	1.0
<i>Ecological Literary Criticism</i>	NA	NA	NA	NA	3	NA	NA	NA	1	NA	NA	NA	3.0
<i>Barriers & Bridges to Renewal of Ecosystems & Institutions</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Blue-Eyed Tarokaja</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Deconstructing the Mind</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Leibniz and Clarke</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Moral Appraisability</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>On God and Dogs</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Problems of Vision</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Race, Rape, and Lynching</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Romances of the Republic</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Scenes of Subjection</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0

Table 37A. Online Use of Contemporary Online Non-Reference Books

Title	Hits on Online Books				Distinct Online Users				Hits/Distinct User				
	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	
<i>W.E.B. Du Bois and American Political Thought</i>	NA	NA	NA	NA	2	NA	NA	NA	1	NA	NA	NA	2.0
<i>Women, the State & Political Liberalization</i>	NA	NA	NA	0	1	NA	NA	0	1	NA	NA	NC	1.0
<i>At Emerson's Tomb</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Conserving Natural Value</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Consuming Subjects</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Eating Disorders</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Ecology, the Ascendant Perspective</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Emotion and the Arts</i>	NA	NA	0	0	0	NA	0	0	0	NA	NC	NC	NC
<i>Empowerment Tradition in American Social Work</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Experiencing HIV</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Extraordinary Bodies</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Folding of Viscous Layers</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Framing Pieces</i>	NA	NA	0	0	0	NA	0	0	0	NA	NC	NC	NC
<i>From Father's Property to Children's Rights</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Hyperses. Life on Land</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Illusion of Love:</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Inhuman Race</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Inmate Capacity</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Last Word</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC

Table 37A. Online Use of Contemporary Online Non-Reference Books

Title	Hits on Online Books				Distinct Online Users				Hits/Distinct User				
	Q1-2/ 97	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99	
<i>Molecular Biology of Gaia</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Organic Matter:</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Parables of Possibility</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	0
<i>Refiguring Life:</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
<i>Sampling the Green World</i>	NA	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	NC
Total	1860	1682	1947	2938	2919	394	387	806	731				
Average	54.7	38.2	31.9	42.0	27.8	9.0	6.3	11.5	7.0	4.3	5.0	3.6	4.0
No. Available Books	34	44	61	70	105								

NA: Not Applicable as book was not available. NC: Not Calculable as no one used the book.

Table 37B. Online and Print Use of Contemporary Online Non-Reference Books

Title	Print Circulation					Distinct Online Users/Print Circulation			
	Q1-2/ 97	Q3-4/ 97	Q1- 2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Politics and the Media</i>	99	55	104	99	103	0.3	0.4	0.2	0.2
<i>Culture of National Security</i>	23	14	38	43	27	0	0.3	0.9	0.8
<i>Mutual Aid Groups, Vulnerable Populations & the Life Cycle</i>	12	19	6	5	20	1.6	3.3	5.8	2.0
<i>International Politics</i>	0	1	68	2	18	12.0	0.1	12.5	1.9
<i>Liberal Moment</i>	0	2	5	0	12	0.0	1.8	NC	0.7
<i>Losing Control:</i>	7	1	4	8	9	NA	2.0	4.9	1.9
<i>Sex Among Allies:</i>	NA	1	6	1	8	0.0	1.7	12.0	0.9
<i>Supervision in Social Work</i>	12	2	11	1	7	20.0	1.4	25.0	3.0
<i>Logic of Anarchy</i>	9	5	0	5	5	0.0	NC	1.8	1.0
<i>Virtues of the Vicious</i>	0	0	1	2	5	NA	0	0	1.2
<i>Women, the State & Political Liberalization</i>	-	-	0	2	5	NA	NA	0	0.2
<i>Interpreting NAFTA</i>	-	-	0	0	5	NA	NA	NC	1.0
<i>China's Transition</i>	NA	NA	2	4	4	NC	4.5	5.5	4.2
<i>Qualitative Research in Social Work</i>	1	2	0	4	4	9.0	NC	10.3	5.5
<i>Weapons, Culture, & Self-Interest</i>	0	0	0	4	4	NA	NC	9.5	8.2
<i>W.E.B. Du Bois & American Political Thought</i>	0	0	7	3	4	NA	NA	NA	0.2
<i>Empowerment Tradition in American Social Work</i>	8	2	8	1	4	NA	NA	NA	0
<i>Gender in International Relations</i>	3	114	2	54	3	0.2	2.5	0.9	3.3
<i>Hemmed In:</i>	13	7	3	16	3	1.7	3.7	0.8	4.3
<i>International Relations Theory & the End of the Cold War</i>	5	4	7	4	2	0.3	1.1	2.8	7.0
<i>Extraordinary Bodies</i>	2	6	2	3	2	NA	NA	NA	0
<i>Inhuman Race</i>	2	1	5	3	2	NA	NA	NA	0
<i>Deadly Imbalances</i>	-	-	2	2	2	NA	NA	0	3.5
<i>Eating Disorders</i>	1	7	4	2	2	NA	NA	NA	0
<i>Psychoanalysis & Black Novels</i>	0	0	0	2	2	NA	NC	0	4.0
<i>Morality of Nationalism</i>	0	0	0	1	2	NA	NC	14.0	5.5
<i>Race, Rape, & Lynching</i>	5	2	2	1	2	NA	NA	NA	0.5
<i>Blue-Eyed Tarokaja</i>	1	0	1	0	2	NA	NA	NA	NC
<i>Managing Indonesia</i>	1	2	2	0	2	6.5	1.5	NC	3.5

Table 37B. Online and Print Use of Contemporary Online Non-Reference Books

Title	Print Circulation					Distinct Online Users/Print Circulation			
	Q1-2/ 97	Q3-4/ 97	Q1- 2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Philosophical Foundations of Social Work</i>	0	1	5	0	2	17.0	1.8	NC	12.5
<i>Ozone Discourses</i>	3	2	3	5	1	3.5	1.0	1.4	8.0
<i>Novel & Globalization of Culture</i>	1	1	2	2	1	13.0	6.0	15.0	15.0
<i>At Emerson's Tomb</i>	1	2	3	1	1	NA	NA	NA	0
<i>Cold War on the Periphery</i>	1	2	3	1	1	NA	0	14.0	3.0
<i>Ecological Literary Criticism</i>	1	3	1	1	1	NA	NA	NA	1.0
<i>Nietzsche's System</i>	2	0	3	1	1	NC	2.0	10.0	5.0
<i>Causality & Explanation</i>	-	-	1	0	1	NA	0	NC	2.0
<i>Deconstructing the Mind</i>	0	0	2	0	1	NA	NA	NA	1.0
<i>Golden Rule</i>	1	0	0	0	1	NA	NA	NA	2.0
<i>Human Animal</i>	0	1	1	0	1	0	0	NC	4.0
<i>Jordan's Inter-Arab Relations</i>	8	0	0	0	1	NC	NC	NC	5.0
<i>"Littery Man:"</i>	0	0	0	0	1	NC	NC	NC	4.0
<i>Loose Women, Lecherous Men</i>	0	0	0	0	1	NA	NA	NA	2.0
<i>Modernism & Theater of Censorship</i>	4	1	0	0	1	5.0	NC	NC	8.0
<i>Philosophy of Math. & Math. Practice in the 17th Century</i>	0	0	0	0	1	NC	NC	NC	9.0
<i>Refiguring Life</i>	1	0	1	0	1	NA	NA	NA	0
<i>Text and the Voice</i>	5	0	1	0	1	NA	NA	NA	21.0
<i>Scenes of Subjection</i>	0	2	4	4	0	NA	NA	NA	NC
<i>Task Strategies: Empirical ...</i>	4	2	0	4	0	10.0	NC	4.5	NC
<i>Barriers & Bridges to Renewal of Ecosystems & Institutions</i>	1	2	0	2	0	NA	NA	NA	NC
<i>Dialogues in Arab Politics</i>	-	-	0	2	0	NA	NA	0	NC
<i>Emotion and the Arts</i>	0	0	0	2	0	NA	NC	0	NC
<i>Parables of Possibility</i>	0	0	1	2	0	NA	NA	NA	NC
<i>Century of Taste</i>	1	0	0	1	0	NC	NC	0	NC
<i>From Father's Property to Children's Rights</i>	1	3	2	1	0	NA	NA	NA	NC
<i>Illusion of Love</i>	0	1	1	1	0	NA	NA	NA	NC
<i>Impolitic Bodies</i>	0	0	1	1	0	NA	NA	5.0	NC
<i>Innate Capacity</i>	0	0	0	1	0	NA	NA	NA	NC
<i>Liberalization & Foreign Policy</i>	0	0	2	1	0	NC	1.5	13.0	NC

Table 37B. Online and Print Use of Contemporary Online Non-Reference Books

Title	Print Circulation					Distinct Online Users/Print Circulation			
	Q1-2/ 97	Q3-4/ 97	Q1- 2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Necessary Madness</i>	0	0	0	1	0	NA	NC	6.0	NC
<i>Other Minds:</i>	2	1	0	1	0	17.0	NC	16.0	NC
<i>Parchment, Printing, & Hypermedia</i>	0	1	1	1	0	0	5.0	21.0	NC
<i>Poetics of Fascism</i>	0	1	0	1	0	6.0	NC	11.0	NC
<i>Rethinking Nationalism.. Arab Middle East</i>	0	1	0	1	0	0.0	NC	9.0	NC
<i>Romances of the Republic</i>	3	1	0	1	0	NA	NA	NA	NC
<i>Self Expression: Mind, Morals</i>	0	0	1	1	0	NC	9.0	11.0	NC
<i>Autonomous Agents: ...</i>	1	3	1	0	0	3.7	5.0	NC	NC
<i>Bangs, Crunches, Whimpers, & Shrieks</i>	0	0	1	0	0	NC	17.0	NC	NC
<i>Causation and Persistence</i>	0	0	2	0	0	NA	0	NC	NC
<i>Children's Literature & Critical Theory</i>	1	0	1	0	0	NC	3.0	NC	NC
<i>China's Road to the Korean War</i>	2	2	0	0	0	NA	NC	NC	NC
<i>Conserving Natural Value</i>	1	0	0	0	0	NA	NA	NA	NC
<i>Consuming Subjects</i>	1	3	0	0	0	NA	NA	NA	NC
<i>Ecology, The Ascendant Perspective</i>	0	0	0	0	0	NA	NA	NA	NC
<i>Experiencing HIV</i>	0	2	1	0	0	NA	NA	NA	NC
<i>Folding of Viscous Layers</i>	0	0	0	0	0	NA	NA	NA	NC
<i>Framing Pieces:</i>	1	0	2	0	0	NA	0	NC	NC
<i>Free Public Reason: ...</i>	0	1	0	0	0	1.0	NC	NC	NC
<i>Freedom & Moral Sentiment:</i>	1	0	1	0	0	NC	1.0	NC	NC
<i>Future of Southern Letters</i>	0	0	0	0	0	NA	NC	NC	NC
<i>Great Paleozoic Crisis</i>	0	0	0	0	0	NC	NC	NC	NA
<i>Handbook of Gerontological Services</i>	1	6	0	0	0	3.7	NC	NC	NC
<i>Hypersea:</i>	2	0	0	0	0	NA	NA	NA	NC
<i>Invasions of the Land</i>	0	0	0	0	0	NC	NC	NC	NC
<i>Last Word</i>	1	2	1	0	0	NA	NA	NA	NC
<i>Law & Truth</i>	0	1	0	0	0	12.0	NC	NC	NC
<i>Leibniz & Clarke</i>	0	0	0	0	0	NA	NA	NA	NC
<i>Living In Time</i>	-	-	0	0	0	NA	NC	NC	NC

Table 37B. Online and Print Use of Contemporary Online Non-Reference Books

Title	Print Circulation					Distinct Online Users/Print Circulation			
	Q1-2/ 97	Q3-4/ 97	Q1- 2/ 98	Q3-4/ 98	Q1-2/ 99	Q3-4/ 97	Q1-2/ 98	Q3-4/ 98	Q1-2/ 99
<i>Logic of Reliable Inquiry</i>	0	0	0	0	0	NC	NC	NC	NC
<i>Majestic Indolence:</i>	0	0	0	0	0	NC	NC	NC	NC
<i>Making Mortal Choices</i>	0	0	0	0	0	NC	NC	NC	NC
<i>Molecular Biology of Gaia</i>	0	1	2	0	0	NA	NA	NA	NC
<i>Moral Appraisability</i>	-	-	0	0	0	NA	NA	NA	NC
<i>Moral Knowledge & Ethical Character</i>	0	0	0	0	0	NA	NC	NC	NC
<i>Morality, Normativity, & Society</i>	1	0	0	0	0	NC	NC	NC	NC
<i>Novel Defense of Scientific Realism</i>	0	0	0	0	0	NA	NA	NC	NC
<i>On God and Dogs</i>	-	-	0	0	0	NA	NA	NA	NC
<i>Organic Matter</i>	0	0	0	0	0	NA	NA	NA	NC
<i>Postcards from the Trenches</i>	0	1	0	0	0	NA	NA	NA	NC
<i>Problems of Vision</i>	0	1	0	0	0	NA	NA	NA	NC
<i>Real Rights</i>	0	1	0	0	0	4.0	NC	NC	NC
<i>Sedimentographica</i>	1	0	0	0	0	NC	NC	NC	NC
<i>Seismosaurus</i>	0	0	0	0	0	NC	NC	NC	NC
<i>Studies in Scientific Realism</i>	-	-	0	0	0	NA	NC	NC	NC
<i>Turning Promises into Performance</i>	1	1	1	0	0	9.0	7.0	NC	NC
<i>Middle East Dilemma</i>	-	-	-	-	0	NA	NA	NA	NC
<i>Sampling the Green World</i>	-	-	-	-	0	NA	NA	NA	NC
Total	259	300	342	312	289				
Average	2.7	3.1	3.2	2.9	2.6	2.7	1.9	4.0	2.8

NA: Not Applicable as book was not available. NC: Not Calculable as no one used the print book (the denominator). “-“ Book was not in collection. Averages are based on books that were available in that period.

In spring 1999, books that were available online by the end of 1998 were used on average by 10 scholars, while the print books circulated fewer than three times on average. Thus, more than three times as many persons *checked out* these books in online form as circulated them in print form.

Non-Reference Books: Concentration of Online Use

Table 38 summarizes the data in Table 37 for the number of online users for each title for

fall 1997 through spring 1999. The number of books with 10 or more users was 19 (43%) in fall 1997, 12 (22%) in spring 1998, 32 (47%) in fall 1998, and 25 (24%) in spring 1999. In general in each of these periods, books on reserve for courses had the most users.

Number of Online Users	Number of Titles				Share of Titles			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
50-59	0	0	1	0	0%	0%	1%	0%
40-49	0	1	1	0	0%	2%	1%	0%
35-39	0	0	3	1	0%	0%	4%	1%
30-34	1	0	0	2	2%	0%	0%	2%
25-29	0	0	4	3	0%	0%	6%	3%
20-24	5	2	5	4	11%	4%	7%	4%
15-19	4	3	4	7	9%	6%	6%	7%
10-14	9	6	14	8	20%	11%	21%	8%
8-9	2	7	8	12	5%	13%	12%	12%
6-7	3	9	9	8	7%	17%	13%	8%
4-5	9	8	3	14	20%	15%	4%	13%
2-3	2	10	2	11	5%	18%	3%	10%
1	2	3	0	13	5%	6%	0%	12%
0	7	5	14	22	16%	9%	21%	21%
TOTAL	44	54	68	105	100%	100%	100%	100%

Note: Detail may not sum to 100% due to rounding.

Online Book Use Per Distinct User

Table 39 analyzes the hits per distinct user of the online books collection. The following shares of the distinct users had more than five hits on the collection: 50 percent in fall 1997, 53 percent in spring 1998, 51 percent in fall 1998, and 55 percent in spring 1999. In spring 1999, more distinct scholars had over 15 hits than had just one or two hits on the online books.

Hits Per User	Percent of Total Distinct Users			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
1	14	11	15	13
2	15	12	12	13
3	10	8	10	8
4	8	8	8	6
5	5	7	5	5
6 - 10	18	17	18	19
11 - 15	8	9	8	9
16 - 20	6	6	5	6
21 - 25	4	4	4	4
>25	14	17	16	18
TOTAL # USERS	1,139	1,221	1,752	2,062

Note: Detail may not sum to 100% due to rounding.

Table 40 gives the distribution of the number of individual titles viewed per distinct user for these three periods.

Online Titles Viewed	Number of Distinct Users				% Of Total Distinct Users			
	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99	Q3-4/97	Q1-2/98	Q3-4/98	Q1-2/99
1	893	967	1,292	1,540	78	79	74	75
2	165	175	271	306	14	14	16	15
3	41	43	90	113	4	4	5	6
4	17	17	44	45	2	1	2	2
5	7	7	24	28	1	1	1	1
6-7	11	7	15	20	1	1	1	1
8-11	4	2	9	8	*	*	1	*
12-14	0	2	5	0	0	*	*	0
15-19	0	0	1	0	0	0	*	0
20-28	1	1	1	2	*	*	*	*
Total	1,139	1,221	1,752	2,062	100%	100%	100%	100%

Notes: * 0.5% or less. Detail may not sum to 100% due to rounding.

From fall 1997 to spring 1999, the number of distinct online book users increased 81

percent to 2,062. The number of multiple-title distinct users increased by 112 percent to 522, or one-quarter of all distinct users. In spring 1999, the maximum number of titles used by an individual was 28 and just one person used that many. Only three scholars used more than ten titles during that period.

Table 41 is a cross-tabulation of the unique titles viewed and hits per unique user. The data are arrayed with percent distributions down the columns. Thus, in spring 1999, 18 percent of the scholars who used only one online book had just one hit on that book. Clearly, one hit was not a meaningful use of a book (but it could be as meaningful as some browsing of books at a library or bookstore shelf). The more titles that a scholar viewed, the less likely he was to have just one hit on each book. In spring 1999 only six percent of the users of two titles had two hits on those titles, and none of the users of six or seven titles had only six to ten hits on those titles. In general, over time the users of the online books made more hits on the books. This suggests that these scholars found value in the online books collection.

User Portal Groups for Non-Reference Book Use

As with the reference books, the user portal group data gave some information about the use of the online books. (Table 42) The data lacked distinct patterns, consistent with the small size of the collection and the varying reasons for use of these online books. Computers in the School of Social Work (ssw) dominated for the Columbia University Press books initially, but their share diminished over time (but with some recovery in spring 1999) as more books in other subjects came online.

USE BY DAY AND TIME -- ALL TYPES OF BOOKS

Table 43 gives breakdowns of use of the online materials by day of the week and time of day for January 1997 to June 1999 in six-month segments.

If usage were distributed evenly across the days of the week, each day would have 14 percent to 15 percent of the use. But traditional use of Columbia's libraries tends to be heaviest from Monday to Wednesday as there are few classes Friday, so it would be reasonable to have a heavier concentration of use of the online books early in the week if they are being used to support class work. However, if they are being used by scholars to support research, they might be used more heavily later in the week when the scholars have more time to do such work during term time, or evenly over the week if scholars are doing substantial research during breaks in the academic year. In fact, by spring 1999 use was heaviest Monday through Wednesday overall but not for every group of books.

Table 41. Unique Users by Hits on Titles Viewed (Percentages)

		Number of Unique Titles Viewed																							
		1				2				3-4				5-7				8-14				15-28			
Hits		3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99
		1	18	14	20	18																			
2	17	15	15	16	8	5	5	5	6																
3	10	10	11	9	10	5	10	6	12	7	5	3													
4	7	8	8	7	13	10	7	8	2	2	4	3													
5	56	7	5	5	4	7	5	8	12	9	5	4	0	0	5	4									
6-10	17	16	16	16	20	19	25	26	17	14	28	28	47	41	0	19	0	0	12						
11-15	7	8	7	8	8	10	10	7	24	12	12	15	18	18	23	15	25	50	0	12	0	0	0	0	0
16-20	4	5	4	5	10	10	5	9	15	12	7	6	0	12	21	10	0	0	7	0	0	0	0	0	0
21-25	3	4	3	3	6	6	6	7	0	5	4	10	18	0	5	4	0	0	7	12	0	0	0	0	0
>25	11	13	11	14	20	27	27	23	17	40	34	31	18	29	46	48	75	50	86	75	100	100	100	100	100
Total Users	893	967	1292	1540	165	175	271	306	41	43	134	158	17	17	39	48	4	4	14	8	1	1	2	2	2

Note: Detail may not sum to 100% due to rounding.

Table 42. User Portals for Non-Reference Book Use — Percent Distribution of CWeb Hits

User Portal	Columbia University Press					Oxford University Press					Simon & Schuster				
	1-2/ 97	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99	1-2/ 97	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99	1-2/ 97	3-4/ 97	1-2/ 98	3-4/ 98	1-2/ 99
barnard	0	*	*	5	6	*	3	*	4	3	0	0	53	9	24
cc	1	6	10	15	14	3	7	6	7	20	3	4	22	6	10
cpmc	*	2	14	5	2	3	4	27	17	2	0	*	0	26	0
cul	6	2	1	9	9	13	4	6	11	16	20	0	*	12	5
cunix	3	26	6	2	1	20	12	13	3	10	69	74	3	2	2
dialup	12	16	22	15	19	22	13	12	24	19	0	5	2	4	4
english	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
gsb	*	*	*	*	*	0	1	6	*	0	0	0	0	0	0
law	0	0	0	*	0	*	1	0	1	*	0	0	0	0	1
pols	0	0	0	0	2	0	0	0	*	0	0	0	0	0	*
rhno	1	5	11	12	9	8	25	7	14	14	3	6	4	31	17
sipa	*	1	1	5	2	5	3	1	*	1	0	6	0	1	1
ssw	72	38	26	10	22	17	3	1	2	2	0	0	0	0	0
tc	*	*	1	*	*	1	3	*	1	1	0	0	0	0	0
other	5	4	6	21	14	8	21	20	15	11	6	4	15	11	36
TOTAL HITS	1,992	1,464	1,124	2,060	1,975	580	335	391	555	606	35	760	454	374	386

Note: * 0.5% or less. NA: Not Available

Table 43. Percent Distribution of Hits On Online Books By Day of Week & Time of Day												
Books/Half Year Period	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Total Hits	Midn.- 6: AM	6: AM - Noon	Noon - 6: PM	6: PM - Midh.
<i>Garland Reference Books*</i>												
1-2/97	29	22	16	11	8	2	12	1,030	13	21	47	19
3-4/97	16	21	23	19	13	5	4	865	12	14	45	29
1-2/98	41	14	7	1	12	12	13	295	19	4	32	45
3-4/98	16	18	17	18	12	5	15	468	10	21	50	18
1-2/99	18	17	20	13	11	7	16	686	9	13	54	24
<i>Granger's Poetry Index*</i>												
1-2/97	13	12	16	12	15	6	26	1,729	31	16	38	15
3-4/97	25	19	14	5	15	3	20	3,935	17	12	37	35
1-2/98	23	22	7	12	10	10	16	1,235	10	20	38	32
3-4/98	11	20	20	10	21	7	12	364	13	21	36	30
1-2/99	25	18	13	12	23	5	5	366	6	10	33	51
<i>Oxford English Dictionary*</i>												
1-2/97	17	15	18	18	14	7	10	5,593	16	12	40	32
3-4/97	18	19	18	13	9	7	15	12,594	19	10	33	38
1-2/98	20	19	14	11	10	11	15	14,795	17	12	36	36
3-4/98	18	19	19	15	9	9	12	23,370	21	11	35	33
1-2/99	18	16	17	14	10	11	14	28,739	18	11	37	34
<i>Chadwyck-Healey Databases</i>												
1-2/97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-4/97	11	35	1	28	19	6	0	72	0	12	85	3
1-2/98	15	22	10	20	20	6	8	1,058	6	12	64	18
3-4/98	16	18	22	17	11	7	9	1,178	12	13	48	28

Table 43. Percent Distribution of Hits On Online Books By Day of Week & Time of Day

Books/Half Year Period	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Total Hits	Midn.- 6: AM	6: AM - Noon	Noon - 6: PM	6: PM - Midh.
1-2/99	18	18	17	16	11	11	9	2,365	11	17	46	26
<i>Past Masters Texts</i>												
1-2/97	19	16	15	11	8	9	21	1,418	16	16	42	25
3-4/97	19	11	18	20	8	8	17	718	21	9	45	26
1-2/98	30	13	15	9	15	10	8	906	9	14	36	40
3-4/98	15	8	13	25	7	17	15	2,478	34	15	24	28
1-2/99	11	28	13	11	18	8	12	1,436	12	9	36	42
<i>CUP Monographs</i>												
1-2/97	10	31	16	18	12	7	6	1,992	3	12	65	20
3-4/97	18	16	24	15	7	9	12	1,464	6	20	50	25
1-2/98	16	20	15	28	5	8	7	1,124	10	13	56	21
3-4/98	13	22	14	16	14	10	12	2,060	8	14	45	33
1-2/99	15	22	16	14	12	12	8	1,975	10	11	51	28
<i>OUP Monographs</i>												
1-2/97	13	7	18	24	14	10	14	580	12	13	55	20
3-4/97	16	13	24	13	13	11	10	335	16	11	34	39
1-2/98	14	22	16	14	22	5	8	391	10	13	57	20
3-4/98	17	24	22	9	14	8	7	555	9	9	50	32
1-2/99	11	16	16	12	30	9	6	606	13	15	54	18
<i>Simon & Schuster Monographs</i>												
1-2/97	69	14	6	0	11	0	0	35	49	11	34	6
3-4/97	16	18	12	15	13	13	13	760	2	40	42	16
1-2/98	11	25	13	9	14	10	18	454	10	7	51	32

Table 43. Percent Distribution of Hits On Online Books By Day of Week & Time of Day

Books/Half Year Period	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Total Hits	Midn.- 6: AM	6: AM - Noon	Noon - 6: PM	6: PM - Midh.
3-4/98	14	36	6	8	16	15	5	374	6	10	57	27
1-2/99	34	18	11	3	4	14	16	386	12	2	29	57
All Online Books												
1-2/97	16	18	17	16	13	7	13	12,377	16	14	45	25
3-4/97	19	19	18	12	10	6	15	20,743	17	12	36	35
1-2/98	20	19	13	12	11	10	14	20,258	15	12	39	34
3-4/98	17	18	18	16	9	9	12	30,847	20	12	36	32
1-2/99	18	17	17	14	11	11	13	36,559	17	11	39	34

Notes: * These are hits on the Web server only. Detail may not sum to 100% due to rounding. NA: Not Available.

An even pattern of use over the day would put 25 percent of the usage in each six-hour period. Alternatively, a pattern reflecting usage of library-based materials would have no usage from Midnight- 6:00 AM and relatively lower usage from 6:00 AM to Noon and 6:00 PM to Midnight as the library is not open for those whole periods. In fact, Noon to 6:00 PM was the heaviest use period overall, but all the other periods saw significant use as well. The pattern of hits suggests that scholars were often using these books in periods when they would not have been able to visit the library.

USER RESPONSES IN INDIVIDUAL & GROUP INTERVIEWS

Our efforts to learn about scholars' reactions to online books included a combination of individual and group interviews and surveys. The first sets of group and individual interviews with Columbia graduate students and faculty members in several disciplines occurred in the first year of the project as we attempted to learn about (1) scholars' reactions to the general concept of online books; (2) design elements they would seek; and (3) how scholars conducted their research and used print books and how online books might fit into that pattern. A previous paper (Summerfield, *Online Books: What Role Will They Fill for Users of the Academic Library?*) details the findings from these early interviews and a related review of the literature. These findings are summarized below.

Later we conducted five group interviews with scholars in fields served by the online books collection.³⁴ In November 1997, we held two discussions with graduate students, in social work and in international affairs and political science. In April 1999, we held three discussions with graduate students and junior faculty, in political science and international affairs, in philosophy, and in literary criticism.

In late spring 1999, we conducted telephone interviews with ten online book users who had consented to an interview in our new pop-up form. These interviews each lasted ten to fifteen minutes. Only about 11 percent of the scholars who were confronted with this online request for an interview responded affirmatively by clicking the *yes* button.³⁵ The rate of completion of interviews with those who responded *yes* was about one-third as about half did not respond to multiple email follow-up requests to set a time for an interview and several of those who did respond were ultimately not available for the interview. Overall cooperation rates might be better during periods other than the end of a semester.

³⁴ The full reports of these focus groups are available upon request. The summaries of the fall 1997 scholar focus groups are taken from the reports submitted by Myer Kutz, the moderator for those two sessions. Project staff moderated the other sessions and prepared the resultant reports.

³⁵ This pop-up form presenting both our request for permission to contact them for a brief interview and the mini-questionnaire became active in late March 1999. About 32 percent of the scholars who came to this page responded *no* to the request for a brief telephone interview and the rest (57 percent) clicked on neither option.

Early Interviews on Use of Books & Potential for Online Books

In spring 1995, we convened discussion groups of graduate students, researchers, and faculty -- two with scholars in neuroscience (one on the main campus and another at the medical school) and one with scholars in philosophy and literature. These fields were selected as Oxford University Press had agreed to provide books in these subject areas.³⁶ The discussions centered on the scholars' current use of computer-assisted communication and research, their expectations for the online book format, and their use of it, and design features that they would value.

In fall 1995, we conducted a program of 28 individual interviews with faculty members and graduate students. Neuroscience, humanities (philosophy and literary criticism), and political science were the target fields, again because we expected to provide books in these fields in the online collection.³⁷ The interviews included a questionnaire that the subjects were asked to complete at the outset and a discussion based on an outline. The discussions lasted from 20 to 60 minutes. These interviews were skewed toward faculty -- with 46 percent professors and 32 percent assistant professors.

These scholars reported having the use of an average of nearly two personal computers with access to the graphical World Wide Web -- the access method for the online books collection. The humanities scholars reported the least access to networked personal computers. Scholars reported a wide range of expertise and comfort with using computer-assisted communication and research methods, with some very current and others novices.

Each scholar had his own ways of approaching the literature in his field. In general, the steps involved in scholars' use of books could be defined as: (1) selecting books to review; (2) obtaining books; (3) sifting books to review; (4) choosing books to browse and to read at length; (5) reading; and (6) retaining and using the books' contents. These steps applied both for a specific research problem and for maintaining subject awareness.

Both the related literature and our research found that scholars and students did not usually read books in their entirety. Our questionnaire asked scholars to distribute their book reading for scholarly research and for teaching purposes over quintiles of the whole book read.³⁸ Less than ten percent claimed to read over 80 percent of a book in at least 50 percent of their cases of reading books for research and none reported that intensity of reading in teaching support. Over a third of scholars reported reading 20 percent or less of a book in at least 50 percent of cases for both research and teaching support.

³⁶ Ultimately, OUP was not able to provide books in neuroscience.

³⁷ These interviews and the discussions the previous spring were viewed both as a means of learning about scholars' attitudes and practices and as a chance for informing scholars about our plans for online books.

³⁸ The scholars often did not respond to this question as requested so results were interpolated from the measures of central tendency many gave.

Scientists tended to use handbooks or books of essays in which only part of the material was of interest. Monographs were relatively uncommon and of limited importance in their fields.

Other scholars noted that they often sought relatively precise information, such as insights on a period or personality, rather than the totality of a book. Frequently, they could spare only enough time to read parts of the book (e.g., introduction and conclusion) that would provide a general sense of its contents. Often they read only the parts of a book they deemed pertinent to their work, whether paragraphs, pages or chapters. These were located via the Table of Contents, Index, chapter headings, or browsing. These scholars tended to read fully only monographs from noted scholars or ones that they felt presented important research in their fields. In addition, humanities scholars read the primary works in their fields closely.

Social scientists and humanists tended to use dozens of books a month in their work while scientists typically used no more than a dozen a month.

For 59 percent of the scholars the number of sessions required for reading a book varied by the amount of the books being read or the density of the argument. Another 33 percent reported that they always spent more than one session with a monograph.

A key component of the process of using a scholarly book is making its contents available for one's scholarship. Effective work requires the reader to have a system for information transfer. Scholars reported a wide variety of such systems; many were frustrated with theirs. Note taking, typically with pen on paper, was common as was photocopying key pages and graphics. Keeping track of those notes and photocopies was a common problem.

Potential advantages of online books identified by these scholars included:

- Searching across a collection and within a book for relevancy to one's work, including reviewing new publications.
- Browsing within a book – if the online books system were designed to facilitate movements made with a print book, such as paging quickly or focusing on a graphical element and reading the material on the surrounding pages.
- Obtaining a book quickly and with certainty (unlike the situation with print books in a library).
- Easy printing out of relevant passages.
- Availability of out-of-print and out-of-copyright books.
- Ability to keep citations and clips from books in files in one's computer.
- Linking of course syllabi to relevant online books.
- Linking of online books to other online books and journal articles.
- Multimedia content that would enrich a book's text content, particularly in

textbooks, but also in other types of books.

Potential shortcomings of online books included:

- Inability to read the whole book online due to the poor ergonomics of a computer screen and the need to sit in an unnatural position at a computer.
- Insufficiently powerful computers and communication linkages to cope efficiently with networked resources.
- Scholars' lack of training on how to find and use the online books.
- Library might buy online books instead of print ones.
- Marketplace and copyright law might evolve to restrict fair use.

Few scholars will be eager to learn the new patterns of presentation and use that come with online books; most will find that the process requires a time investment and initially slows their work. Early designers of online books systems should strive to make them close to print books in look, feel, browsing, searching, and other utilities, while also providing obvious advantages to users. Institutions providing online books must ensure that scholars can readily access them and that use will be as smooth as possible. If these conditions cannot be met, scholars may attempt to use online books, be frustrated, and be reluctant to try again even when they have been assured that the system has been improved.³⁹

Group Interview Cohorts: 1997 & 1999

In fall 1997, the social work group included the 13 masters-level participants in a research methods course. The political science and international affairs group included 11 students, all doctoral candidates. Most were recruited via recommendations from faculty and other students, but some were known as a result of earlier interviewing. The same script was used for both sessions.

In spring 1999, the philosophy and political science groups each included eight scholars, and the literary criticism group included 11 persons. Potential participants were identified by recommendations from subject librarians and participants in these fields with whom we had had previous contact, an online list of graduate students in philosophy, and from lists of instructors for Contemporary Civilization, Literary Humanities, and Logic and Rhetoric courses. The same script was used for all three sessions. Besides participating in the discussion, each scholar completed a one-page questionnaire about access to graphical Web-connected computers, time online, use of full text online resources, and use of books.

³⁹ The evaluation team working with the Digital Library Initiative at the University of Illinois came to the same conclusion in developing their online journal interfaces and in observing their scholars' behavior in using those interfaces. See the articles by Ann Bishop and her colleagues from the bibliography.

Each of these five discussions lasted about two hours including time for arrivals and a meal.

Summary of Findings from Group Interviews

Social Work Group, Fall 1997

Social work students used a variety of sources to stay current in their professional work. These sources included journals, abstract and index services, Internet sites, and books. Participants cited the web and journals as places to start on a new topic or to turn to first for the most current information.

Participants used large numbers of books in both social work and psychology disciplines. Most commonly, they read only selected portions of books, usually a chapter here and a chapter there, rather than whole books. Some participants had their own collections, and most enjoyed frequenting bookstores, not only to buy books, but also to scout newly published titles. In addition, most participants used Columbia libraries, although none of them found them convenient or user-friendly.

Participants photocopied extensively from print books and journals. They marked up these photocopies and saved them.

Virtually all participants used electronic resources for research. When participants went online to find information, they stayed online for an hour or two. In general, they found these sessions satisfying, even though they did not always get what they wanted.

If books were available online to participants, they would access portions of the books and print out what they wanted. Almost no one wanted to read on screen. Participants would want to have print copies and to keep them.

Participants would have liked core titles – textbooks, university press monographs, up-to-date encyclopedias – to be available online. They wanted full text — books, journal articles, dissertations, and conference proceedings – not just abstracts. They approached searching full-text books in similar fashion to searching bibliographic databases. A few participants appreciated the physical convenience of online access and searching. Even with a very large collection of social work titles available on a web site, and even with a substantial number of titles added annually, most participants thought that they would still want to visit a library or bookstore and peruse the shelves.

If using a site with books entailed paying a fee, a monthly fixed charge would be most attractive. But participants might balk at even a small monthly fee if their usage were minimal and might prefer transactional fees.

Participants believed that authors would be fairly compensated when their books were made available online, and that online publication might help sell more print copies.

International Affairs Group, Fall 1997

International affairs and political science graduate students reacted positively to having books available online. They believed that such access would lead to their purchasing more books. It would improve their research capabilities and would enable them to assign more books to their classes. They would like to see abstracts, reviews, forward and backward links, hypertext, regular indexing, keyword searching, email, and discussion forums on an online books site.

To keep current in their field, participants read newspapers and journals. To a lesser extent, they monitored Internet sites. For information, they turned first to journals or, to a lesser extent, the Internet. They also went to CLIO (Columbia's online library catalog) to locate sources of information on a new topic. Journal advertisements were an important source of information about new books.

Participants used the Internet more for email than for research, although several read periodicals online and used other information sources on a regular basis.

Participants' opinions with regard to books were:

- They take too long to come out.
- It takes a lot of time not only to read books, but also to find them in the library.
- Books are best for history.
- Some tend to use only parts of books rather than read them in their entirety.
- They would have liked to buy more books than they did.

Participants found Columbia libraries frustrating. They complained about both the lack of availability of books and the staff. CLIO and computerization received better marks.

Participants' comments about having books available online were:

- Electronic publishing can promote print books. They learned about books via the online collection.
- They could easily access portions of books.
- Online search options are helpful but traditional book indexing is very useful for location information.
- Online citations and pagination are a problem.
- Online publishing is a useful means of presenting critical editions of classical texts.
- Online availability of books would enable scholars to use more books in their teaching.
- There was no majority opinion on how pages should appear on a screen.

- They would not object to their own works being put online.
- They were concerned that books would not remain online for as many years as they would be valuable – say two decades at least.

In addition participants would like to have available on an online books site the following:

- Abstracts of books and review articles, which would make it easier for them to decide whether they would like to pursue a particular title.
- Ability to email authors.
- Discussion forums.
- Forward links to articles and books that reference books on the site and backward links to items cited in those online books.

Scholars Group Interviews: April 1999

While there were some variations by discipline in the responses to our questions in these focus groups, there was more consistency than difference. Highlights of these discussions and responses to the questionnaire include the following.⁴⁰

Scholars read relatively little of most of the books that they reviewed for their work. Some received cursory glances and were shown to be of no value. At an intermediate level, the introduction, a few pages to a couple chapters, and the bibliography, footnotes, and index were browsed or read in some other books. Only a few books were read at great length. Scholars in some disciplines, such as history, were more likely to read whole books as the narratives are structured as a flowing argument.

Most of the scholars could see benefit in doing the initial reviews of books online – especially with a strong, flexible search engine and a collection that contained virtually all of the current publications of the major academic publishers in their fields. This would save them substantial time in hunting in the library (often futilely) for books that may or may not be useful to their work.⁴¹ However, if the collection were so sparse that they would have to do the traditional forms of searching for most works, it would have modest value.

At this time, few scholars envisioned being comfortable doing the intermediate level of book use strictly online. They wanted to be able to flip between pages, to follow the line of reasoning, to move from reference to footnote, from index to text easily. Their current experience with online full text materials did not give them confidence that they would be

⁴⁰ Our full report on these discussions is online at:
http://www.columbia.edu/cu/libraries/digital/olbdocs/focus_spring99.html.

⁴¹ To date the search engine across the online books collection and within the online books were used only modestly.

comfortable doing so online. However, they encouraged designers of online systems to make them as compatible with these patterns of usage as possible. They felt that given navigational flexibility, speed, and design that took advantage of interactivity, as well as substantial collections, scholars would increase their use of online books.

Scholars were adamant in their desire to obtain a paper copy of a book that they wanted to read at length within a short time of identifying their interest in that book.⁴²

Scholars reported that they have a daunting task in keeping track of their research and applying it to their development of lectures and papers. They saw value in being able to cut and paste bits of an online text into a computer file especially if those bits came with the appropriate citation material, including page numbers. Being able to have a file of annotations, underlining, and highlighting marks for an online text would also be useful. However, scholars were used to writing with pages of notes and open books surrounding them on the floor or desk. They could not envision being able to work strictly with notes on a screen. Ultimately the scholar would need to print those computer-based notes for use in composition.

Findings from Telephone Interviews, Spring 1999

With only ten interviews, we can draw no statistically meaningful conclusions about scholars' responses to our questions. Highlights of the interviews follow.

Nine of the ten scholars interviewed were students – 3 undergraduates, 2 masters, and 4 doctoral. The final person was a libraries bibliographic staff member.

Six were involved in political science and regional studies, two in social work, and one in mathematics.

Eight had ready access to a personal computer with a link to the campus network. Hours spent in online activities weekly varied widely – from five to 30 – with most in the midrange. The two who lacked their own computers were the lightest online users while the heaviest users tended to live on campus and to have Ethernet connections.

Most made modest use of online full text journals and books during spring 1999, but use ranged from 1-5 items to 100 items. Use of the online books collection was also modest, with the majority having used the collection only on the occasion on which they consented to the interview, and the majority having used only one or two titles.

Nine responded that they would have used the online books collection more if it were

⁴² Scholars at major research universities like Columbia or in major cities with a great breadth of library collections like New York are used to being able to obtain most of the books they want to review fairly easily. Scholars at smaller institutions or in smaller communities do not have that luxury of access. Their reactions to online books may be more positive as online books would be more likely to fill gaps in their ability to do research or assign materials in courses.

much larger, with the dissenter noting that he did not like to read much online. Asked why they would use the collection more if it were larger, respondents revealed a general sense of the potential for online books. They would use them to narrow searches, to find material for research projects, to do reserve readings, to satisfy curiosity about various books, to obtain books without going to the library, because the material would be available, to skim books, to do short assignments, and to obtain reference works.

These scholars were generally satisfied with their experience in using the online books collection. Half gave a nine or ten rating on a ten-point scale. Two gave a seven or eight and two gave a five or six. One was dissatisfied, as she could not get through to the system on her most recent try.

The features for searching within the collection and within a book were used by three of the scholars. Four printed out some of the books – from about one chapter to a whole book. Only one copied part of the book (about 20 pages) to a file.

Design changes and enhancements that were suggested included:

- Page numbers in online books so that the books could be cited in the standard way and so that citations, such as class reading assignments, could be tracked to the online version.
- Changes that would make it easier to read online at length, e.g., two pages on a screen and more white space.
- Option to see a whole book in a single file.
- Shorter lines, less *scrunched* look.
- Search by page number.
- Better blocking on screen.
- Index of terms.
- Cookie that recognizes user and customization features.
- Page headers to identify essays in a collection.
- Straight text with no embedded elements.
- Next section feature.

Asked about their feelings about the general concept of online books and what advantages and disadvantages they have relative to print books, the users responded positively.

Affirmative comments included:

- Convenient, one saves the time of going to the library and checking out books. It is easier to get to a book with online books.
- One can look at books without buying them.
- Online books are good; I am willing to read online and comfortable doing so; I would print out interesting parts.

- Keyword searching is handy.
- Love it; online books help scholarly communication.
- Good for browsing and printing out small parts of a book.
- Save money and space for the reader, but would mostly read off screen.
- Good for reading small amounts.
- Reserve books online would be particularly advantageous.
- No worry of book being checked out; multiple users possible at once.

The key reservations were the difficulty of reading online at length, the desire to use a print copy if a major part of the book were to be read, and the lack of immediate accessibility if the scholar were not at a computer with a graphic Web browser.

Users did not have strong opinions on what types of books would work best online. Reference works were favored, but so were texts as reserve substitutes, and edited collections. Online compendia of classical works in a field would be valued, especially if one could search broadly through the collection. A mathematics scholar felt that books in his field – with all their equations – would not work well online.

Asked when they would use an online book in preference to a print book, these scholars had a wide range of responses and some lack of insight (not inappropriate given their limited experience). They generally preferred situations in which they would be using a small part of a book for research or course reading. One cited 100 pages as an upper limit, but noted that she would print that amount out as well. Two thought they would use online books in most cases unless they wanted to own the book. Another preferred print books so would use the online version only for immediate needs when she had no time to go to the stacks and get a print version. Most felt that they would choose the format for a given task based on which seemed most compatible to that task.

Six of the ten thought online books would change their way of using libraries. They would make fewer trips to the library, do initial literature reviews online, spend less time hunting for books in the stacks and worry less about library hours. Online books would simplify and speed up the research task.

Six (not the same individuals in every case) thought online books would change their book buying behavior. They would preview books online, buy only those books that were core to their work, be more knowledgeable about books before deciding what to buy, perhaps buy different titles, and read more online and buy fewer books.

Nine of the ten thought that online books would make them more efficient scholars. Seven thought that online books would make them more effective scholars.

In summary, these neophyte online book users were generally enthusiastic about the format. However, like the other scholars we interviewed, they did not see online books replacing print books in situations in which a scholar would want to read a substantial

part of the book.

SURVEYS

As noted at the beginning of this report, this project used surveys extensively in an effort to learn widely about how scholars use books, their perceptions of paper and online books, their access to and use of online resources, and differences among scholar cohorts. Five main forms of surveys were used:

In-class surveys: These were administered in-class to students on the day following a reading assignment in one of the books in the online collection.

Circulating book survey: Every four to six weeks we determined who had borrowed paper copies of the online books in the Libraries' non-reserves collections and sent them a questionnaire. A small gift and a stamped, self-addressed envelope were included along with an explanatory letter.

Reserves book survey: Each print copy of an online book that was on reserve had a special label. Reserves desk staff were instructed to give scholars who checked out these books a copy of the questionnaire with instructions to return the questionnaire with the book. These respondents were entered in a raffle for a Barnes and Noble gift certificate. We received a small stream of responses from the Undergraduate Reserves Room in the early years, but none in the last year even after reminders to staff.

Reference book survey: The print copies of the reference books in the online books collection were stuffed with copies of the questionnaire. Users were asked to return a completed questionnaire to the reference desk. These respondents were entered in a raffle for a Barnes and Noble gift certificate. In the early years of the project, we received a steady if modest stream of questionnaires back from users of the main set of *The OED* in the main reference room in Butler Library, our humanities library. However, as these volumes were shifted with a renovation project in Butler, the stream dried up. At no time did we receive any responses for the other reference works.

Online surveys: These were customized for the various reference works and the monographic books. Initially the online questionnaires were presented in two parts – the first came to the computer screen (*popped up*) when the scholar clicked on a book title; the scholar was asked to click on the second part when he was done with his session. The second section dealt with the scholar's reaction to the experience of using the online book. The response rate to the first part was moderate, to the second part tiny.

As a result, we shifted to a single longer questionnaire with the scholar choosing to click on it. Again response rates were tiny, even with an incentive of being entered in a raffle for a Barnes and Noble gift certificate. In spring 1999, there were 3,062 instances of a scholar using an online book. During the same period, only 91 persons (3%) clicked on this survey.

In late March 1999, we introduced a new form of the online questionnaire in which one of five alternative one-screen forms popped up when the scholar hit on a title. The five forms encompassed all of the questions on the earlier longer single form. About 41 percent of the persons who proceeded to use the online book completed the questionnaire in part or in full.⁴³

For the last three forms of surveys, we offered an inducement of participation in a raffle for a gift certificate at Barnes & Noble. That raffle was initially a biweekly raffle for \$20 value and, from fall 1997, it was a monthly raffle for a \$50 gift certificate. A small gift was included with the mailing of the questionnaire to the scholars who borrowed regular circulating books. No inducement was used to obtain participation in the in-class survey. Since the students were already in their class and the instructor had endorsed the survey, they tended to cooperate.

The results of these surveys are summarized below. In most cases the numbers of responses in a period were well under 100, so the statistical analysis possible was modest.

The In-Class Survey

As Exhibit 1 shows, the in-class survey sought to determine what method of doing an assignment students used, their time and location(s) for doing it, preferred book format, and effects of using the preferred format. Standard questions on access to a networked computer and weekly time spent online were also asked.

Distribution of Survey across Classes and Books

In fall 1997 semester, we surveyed 218 students in seven classes using six different texts in the online collection. Almost half of the responses were for a single book, *Gender in International Politics*. These responses came from two classes in political science and international affairs. *The Prince* and *Leviathan* were the titles surveyed for two Contemporary Civilization sections; about half of the responses for *The Federalist Papers* were also from a Contemporary Civilization section. The other two titles were each surveyed in a single international affairs class. (See Table 44.)

⁴³ About one-fifth of those who came to the pop-up screen backed out, that is they did not proceed to use the book. The presence of the questionnaire may have confused or frustrated them.

Exhibit 1. Survey Of Book Use For Course Readings

As part of its effort to serve you better, the Libraries would like to know what methods you used in reading an assignment for this class session. All responses will be kept confidential.

A. Did you read the assignment in Tickner's *Gender in International Relations* for this class session?

1. YES (If so, please answer all the questions.) 2. NO (If not, please skip down and answer Questions F-J only.)

B. Following is a list of methods that you might have used in doing this reading. Please tell us if you used each for this assignment. If you used a method, please tell us for about how long you used it and where you did this reading.

Methods of Reading This Assignment	Did you use it? (Please circle)	For about how long? # Hours & # Minutes	Where (e.g., library, dorm room, lounge, classroom)?
1. Your own copy of the book	1.YES 2.NO		
2. A friend's copy of the book	1.YES 2.NO		
3. A library copy of the book	1.YES 2.NO		
4. Photocopy from paper copy	1.YES 2.NO		

Using CWeb Online Book:

5. Reading it directly from CWeb	1.YES 2.NO		
6. JAKE printout of text	1.YES 2.NO		
7. Printout using non-JAKE printer	1.YES 2.NO		
8. Download of online text to disk & reading away from CWeb	1.YES 2.NO		

C. If you used more than one method, which one did you like best? (Please circle the number of the preferred method from the above table.) 1 2 3 4 5 6 7 8

D. Why did you like that method best? (Please circle the numbers of all the reasons that apply.)

1. Less costly 2. Easy to get to 3. Easy to read 4. Always available 5. Easy to copy 6. Easy to search for words or concepts 7. Easy to annotate/take notes 8. Other reasons:

E. What were the impacts on your work of using the method you liked best? (Please circle the numbers of all that apply.) 1. I learned better. 2. I learned faster. 3. Learning was more fun. 4. I was more likely to do the assignment. 5. Reading the assignment was more difficult. 6. Doing the assignment was faster. 7. Doing the assignment was slower. 8. Other impacts:

F. Which of these methods of reading this assignment do you think was most used by your classmates? (Please circle the number of the method from the above table.) 1 2 3 4 5 6 7 8

G. Is there a computer connected to the campus network (by modem or direct link) that you can use whenever you want? (Please circle.) 1. YES 2. NO

H. Is there a computer with a Web browser that you can use whenever you want? 1. YES 2. NO

I. About how many **hours per week** do you spend in each of the following online activities?

____ Email ____ Listservs and Newsgroups ____ CLIO Plus
 ____ Scholarly Text, Image or Numeric Data Sources ____ Other WWWeb

J. Your insights into your experience and preferences in using various book formats are valuable:

Thank you for your assistance with this study.

In spring 1998, 133 students in four courses were surveyed. *Politics and the Media* and *The Federalist Papers* were read in undergraduate political science courses. *Treatise of Human Nature* was read in an undergraduate political philosophy course. *Mutual Aid Groups, Vulnerable Populations, and the Life Cycle* was read in a graduate social work course.

In fall 1998 112 students in three courses were surveyed. Both *China's Transition* and a small part of *Gender in International Politics* were read in undergraduate political science courses. Part of *Sex among Allies* was read in a graduate seminar in history.

In spring 1999 182 students in five advanced undergraduate and lower level graduate political science courses were surveyed. One used *On Liberty*, one large lecture class used a small part of the text *International Politics*, two used parts of *Weapons, Culture, and Self-Interest*, and one smaller graduate class used some of *Rethinking Nationalism in the Arab Middle East*.

Title	Fall '97		Spring '98		Fall '98		Spring '99	
	No.	%	No.	%	No.	%	No.	%
<i>The Federalist Papers</i>	41	19	33	25	0	0	0	0
<i>The Prince</i>	17	8	0	0	0	0	0	0
<i>Leviathan</i>	18	8	0	0	0	0	0	0
<i>Managing Indonesia</i>	17	8	0	0	0	0	0	0
<i>Gender in International Politics</i>	101	46	0	0	64	57	0	0
<i>Politics & the Media</i>	24	11	56	42	0	0	0	0
<i>Treatise of Human Nature</i>	0	0	19	14	0	0	0	0
<i>Mutual Aid Groups, ...</i>	0	0	25	19	0	0	0	0
<i>China's Transition</i>	0	0	0	0	41	37	0	0
<i>Sex Among Allies</i>	0	0	0	0	7	6	0	0
<i>On Liberty</i>	0	0	0	0	0	0	36	20
<i>Weapons, Culture, & Self-Interest</i>	0	0	0	0	0	0	42	23
<i>Rethinking Nationalism in the Arab Middle East</i>	0	0	0	0	0	0	19	10
<i>International Politics</i>	0	0	0	0	0	0	85	47
TOTAL	218	100	133	100	112	100	182	100

Note: In general response rates are near 100% for the students in a class at the time of the survey with surveying done near the end of the class session. The response for *Gender in International Politics* in Fall 1998 was much lower, possibly 65%, due to the large size of the class and the beginning-of-class timing of distribution of the questionnaire.

Methods of Reading the Assignment

As Exhibit 1 shows, the first question asked if the student read the assignment in the book in the online collection for that class session. If the student did not, he was to skip to general questions at the end of the form. If he did, he was to note which methods of reading the assignment he used, how much time he spent with each method, and where he did the reading.

Affirmative response rates were:

Fall 1997	186	85%
Spring 1998	92	69%
Fall 1998	65	61%
Spring 1999	102	56%

Over time the affirmative response rate declined substantially. However, looking closely at the spring 1999 data, we find that four of the five courses had affirmative response rates of 75 percent to 89 percent. However, the largest course (with 81 responses) had an affirmative response of only 30 percent.

Responses to the question on methods of reading this assignment (which allowed multiple responses) were distributed as shown in Table 45. The questionnaire gives four alternative means of *Using CWeb Online Text*:

- Reading it directly from CWeb
- JAKE printout of text, the campus printing system
- Printout using non-JAKE printer
- Download of online text to disk and reading away from CWeb

In fall 1997, there were 21 reports (10%) of using some form of CWeb book, and ten (5%) of reading directly from CWeb. In fall 1998, 22 percent of responses were uses of some form of CWeb book, with 12 percent reading directly from CWeb. In spring 1999, 39 percent of responses were uses of some form of CWeb book, with none reading directly from CWeb. The rate of using a CWeb format ranged from a low of 12 percent in one course to a high of 68 percent in the course reading *On Liberty*.

Methods of Reading Assignment	Fall 1996		Spring 1997		Fall 1997		Spring 1998		Fall 1998		Spring 1999	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Used Own Copy	269	67	141	61	140	66	59	69	42	54	39	39
Used Friend's Copy	54	14	20	9	18	8	5	6	4	5	3	3
Used Library Copy	33	8	17	7	25	12	18	21	11	14	20	20
Used Photocopy	11	3	17	7	9	4	3	4	4	5	14	14
Read it directly from CWeb	15	4	15	6	10	5	9	10	9	12	0	0
JAKE printout of text	10	23	16	7	3	1	2	2	3	4	21	21
Printout using non-JAKE printer	4	1	4	2	3	1	1	2	2	3	15	15
Download online text to disk & read away from CWeb	5	1	1	*	5	2	0	0	3	4	3	3
Total Use of Online Versions	34	8	36	16	21	10	12	12	17	22	39	39
Total Responses	401		231		213		97		78		99	

Note: JAKE is the networked laser printer system maintained by AcIS. Undergraduates and Social Work students have a free 100-page quota for JAKE printing every week as part of their computing services fee. Other students can purchase JAKE printing. * 0.5% or less.

Preferences for Studying Class Reading

There were far fewer responses as to the preferred mode of reading an assignment. (Table 46) This is logical as this question was to be answered only if more than one mode had been used for this assignment. However, the distribution of responses makes it clear that the students did not respond to the question as given. For example, in spring 1999, seven responded that reading the assignment on CWeb was the preferred method, but no one checked that as a method used.

Reading one's own copy was most preferred in all semesters. However, while in early semesters at least 64 percent of respondents gave this preference, by spring 1999 less than a third of respondents did so and 43 percent preferred some form of CWeb use (up from just 12 percent in fall 1996).

Preferred Method of Reading Assignment	Fall '96		Spring '97		Fall '97		Spring '98		Fall '98		Spring '99	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Own Copy	83	67	56	64	57	79	25	66	19	66	14	30
Friend's Copy	9	8	6	7	1	1	3	8	1	3	0	0
Library Copy	10	8	6	7	8	11	4	10	3	10	7	15
Photocopy	7	6	8	9	4	6	1	3	0	0	5	11
Read directly from CWeb	2	2	7	8	2	3	4	10	3	10	7	15
JAKE printout of text	7	6	6	7	2	3	1	3	1	3	6	13
Printout using non-JAKE printer	3	2	5	6	0	0	0	0	1	3	4	9
Download online text to disk & read away from CWeb	3	2	1	1	2	3	0	0	1	3	3	6
Total Online Preferences	15	12	19	20	6	8	5	13	6	21	20	43
Total Responses	124		95		76		38		29		46	

Note: Detail may not sum to 100% due to rounding. JAKE is the networked laser printer system. Undergraduates and Social Work students have a free 100 page weekly quota. Other students can purchase JAKE printing.

Reasons for Preference for a Method of Reading Assignment

Question D asked why a method was preferred, gave a set of reasons, and asked the respondent to select one or more of those reasons. *Always available* was the reason given most often (except fall 1998), but fewer respondents cited it in the more recent semesters. (Table 47) *Easy to get to* was the second most common response (except in fall 1998 when it was the most common response).

The cross-tabulation of preferred method of use and reasons for that preference (Table 48 for spring 1998 to spring 1999) produced generally consistent results. *Always available*, *easy to read*, *easy to get to*, and *easy to annotate/take notes* were key reasons for preferring one's own copy of a book. *Easy to get to* was a key reason for preferring using the book on CWeb, but the incidence of mentions for the other reasons and the other forms of using the online books varied considerably.

Reasons for Preference	Fall '96		Spring '97		Fall '97		Spring '98		Fall '98		Spring '99	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Always Available	199	69	108	68	107	74	46	71	23	43	49	60
Easy to Get To	148	51	74	46	79	54	32	49	26	48	46	56
Easy to Read	104	36	70	44	58	40	20	31	25	46	29	35
Easy to Annotate	135	47	57	36	67	46	18	28	11	20	29	35
Less Costly	60	21	33	21	28	19	17	26	8	15	27	33
Other Reasons	25	9	16	11	19	14	8	13	4	7	9	11
Easy to Search for Words	30	10	15	9	14	10	7	11	3	6	7	8
Easy to Copy	21	7	20	13	7	5	2	3	1	2	6	7
Total Cases Responding	290		159		145		65		101		82	

Note: Respondents could give more than one reason for their preference. Percents are percent of cases giving this response.

Preferred Method & (No. Giving It)	Reason for Preference (Number of Responses for Method)							
	Less Costly	Easy to Get To	Easy to Read	Always Available	Easy to Copy	Easy to Search for words	Easy to Annotate/ Take Notes	Other
Own Copy								
Spring '98 (25)	1	9	8	19	0	2	6	3
Fall '98 (19)	0	6	9	12	0	1	4	3
Spring '99 (14)	0	8	6	12	0	1	11	0
Friend's Copy								
Spring '98 (3)	1	2	0	3	0	1	0	0
Fall '98 (1)	0	0	1	0	0	0	0	0
Spring '99 (0)	NA	NA	NA	NA	NA	NA	NA	NA
Library Copy								
Spring '98 (4)	2	0	0	1	0	0	0	1
Fall '98 (3)	0	2	1	0	0	0	0	0
Spring '99 (6)	2	2	3	1	0	0	0	1
Photocopy								
Spring '98 (1)	0	0	0	1	0	0	1	1

Table 48. Preferred Method & Reason for Preferred Method: Whole Sample								
Preferred Method & (No. Giving It)	Reason for Preference (Number of Responses for Method)							
	Less Costly	Easy to Get To	Easy to Read	Always Available	Easy to Copy	Easy to Search for words	Easy to Annotate/ Take Notes	Other
Fall '98 (0)	NA	NA	NA	NA	NA	NA	NA	NA
Spring '99 (5)	0	1	0	2	1	0	3	0
On CWeb								
Spring '98 (4)	3	3	1	4	1	1	0	0
Fall '98 (3)	1	3	3	2	0	1	0	0
Spring '99 (7)	4	5	0	4	1	1	0	0
JAKE Printout								
Spring '98 (1)	1	0	0	1	0	1	0	0
Fall '98 (1)	0	1	0	0	0	1	0	0
Spring '99 (6)	2	3	4	4	1	2	3	0
Other Printout								
Spring '98 (0)	NA	NA	NA	NA	NA	NA	NA	NA
Fall '98 (1)	1	0	0	0	0	0	0	0
Spring '99 (4)	2	3	3	4	0	0	2	1
Download to Disk								
Spring '98 (0)	NA	NA	NA	NA	NA	NA	NA	NA
Fall '98 (1)	0	1	0	1	1	0	0	0
Spring '99 (3)	1	1	1	2	0	0	1	1
Total								
Spring '98 (36)	8	14	9	29	1	5	7	5
Fall '98 (27)	2	13	14	15	1	3	4	3
Spring '99 (44)	11	22	16	28	3	4	19	3

Impact of Preferred Method

When asked about the impact of the various possible modes, in all but one semester a majority of the students selected *more likely to do the assignment*. (Table 49) *Doing assignment faster* and *learned better* ranked second and third, being cited by about one quarter to one third of the students.

Cross tabulating preferred method and impact of preferred method on work (Table 50 for spring 1998 to spring 1999) found that *more likely to do assignment (work)* was the most frequently cited impact overall and for almost all the preferred methods. Those who preferred reading on CWeb also commonly mentioned the positive impacts of *doing the assignment (work) faster*.

Table 49. In-Class Surveys: Nature of Impact of Preferred Method: Whole Sample

Impact of Preferred Method	Fall 1996		Spring 1997		Fall 1997		Spring 1998		Fall 1998		Spring 1999	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Learned Better	92	34	51	34	39	28	17	27	19	36	22	26
Learned Faster	51	19	27	18	34	25	11	17	14	27	14	16
Learning More Fun	16	6	13	9	13	9	4	6	7	14	4	5
More Likely To Do Assignment	154	57	82	54	90	65	41	64	24	46	48	56
Reading More Difficult	8	3	1	1	3	2	2	3	2	4	2	2
Doing Assignment Faster	85	31	56	37	62	45	19	30	17	33	28	33
Doing Assignment Slower	12	4	2	1	8	6	1	2	1	2	5	6
Other Impacts	29	11	21	14	17	12	9	14	8	15	9	10
Total Responses	447		253		266		64		92		132	
Total Cases Responding	271		152		138		32		52		86	

Table 50. Preferred Method & Nature of Impact

Preferred Method	Impact of Preferred Method On Work (Row Percentages)							
	Learn Better	Learn Faster	Learning More Fun	More Likely to Do Work	Reading More Difficult	Doing Work Faster	Doing Work Slower	Other
Own Copy								
Spring '98	33	19	10	62	0	29	0	5
Fall '98	47	41	18	59	0	41	0	12
Spring '99	43	29	14	64	0	57	0	7
Friend's Copy								
Spring '98	0	0	0	100	0	33	0	0
Fall '98	0	100	0	0	0	0	0	0
Spring '99	0	0	0	0	0	0	0	0

Table 50. Preferred Method & Nature of Impact								
Preferred Method	Impact of Preferred Method On Work (Row Percentages)							
	Learn Better	Learn Faster	Learning More Fun	More Likely to Do Work	Reading More Difficult	Doing Work Faster	Doing Work Slower	Other
Library Copy								
Spring '98	0	0	0	33	0	0	0	67
Fall '98	0	67	0	0	0	0	0	33
Spring '99	29	29	0	14	0	14	29	14
Photocopy								
Spring '98	100	0	0	0	0	0	0	0
Fall '98	0	0	0	0	0	0	0	0
Spring '99	50	50	0	50	0	50	0	0
On CWeb								
Spring '98	0	33	0	100	33	33	0	33
Fall '98	0	0	0	100	0	67	0	0
Spring '99	0	17	17	67	17	0	0	17
JAKE Printout								
Spring '98	0	0	0	0	0	100	0	0
Fall '98	0	0	0	100	0	0	0	0
Spring '99	20	20	0	60	0	60	20	0
Other Printout								
Spring '98	0	0	0	0	0	0	0	0
Fall '98	0	0	0	0	0	0	0	100
Spring '99	25	0	0	75	0	75	0	0
Download to Disk								
Spring '98	0	0	0	0	0	0	0	0
Fall '98	0	0	100	0	0	0	0	0
Spring '99	0	0	0	33	33	0	33	0
Total								
Spring '98	25%	16%	6%	62%	3%	28%	0%	12%
Fall '98	30%	37%	15%	52%	0%	33%	0%	15%
Spring '99	29%	24%	7%	52%	5%	38%	10%	7%

The Online Surveys

The Online Interview Instruments

The long form online instrument (which is basically the same as the print instruments used in circulating books and reference books) is mounted as an HTML form. Exhibit 2 gives key elements.

Exhibit 2. Online Survey Instrument: Non-Reference Books

Use of Books Study: Online Texts

As part of a major research program, the Libraries are studying scholars' use of books. Please assist in this research by answering these few questions. If you do so, we will give you a chance in our monthly raffle for \$50 copycards as a token of our appreciation. Details are at the end of the questionnaire.

A. What is the title of the book you just used? (Drop-down list)

B. Please select the best description of that work or project for which you are using this book: If *Other*, please specify: (Drop-down list of the following.)

1=Research project, e.g., paper, book 4=Other University activity

2=Class preparation 5=Other:

3=Current awareness in field

C. How long ago did you recognize the need to consult this book for this use? Please put the approximate number (of weeks, days, hours, or minutes) in the box to the left and select the appropriate time unit:

D. How soon do you expect to make use of what you get from this book? Please put the approximate number (of weeks, days, hours, or minutes) in the box to the left and select the appropriate time unit:

E. What did you do with this book on this occasion? (Select all applicable uses):

Looked up something

Read:

Searched for something

less than 10% of book,

Looked at citations

10-30% of book,

Looked at table of contents and/or index

over 30% of book

Looked at introduction and/or conclusions

Other:

Looked at graphics

F. Which forms of this book have you ever used? (Select all that apply by checking the checkboxes in the left column [Used] below.)

If you have used this book in more than one way, which one do you prefer overall? (Select one of the "radio" buttons in the right column [Prefer] below.)

Used	Prefer	Form
-------------	---------------	-------------

Online copy in library

Online copy elsewhere

Printout from online copy

Download from online

Library's paper copy

My own paper copy
A colleague's paper copy
Photocopy from paper copy
CD-ROM

G. Referring to the way of using this book that you prefer, why do you like it best? (Select all that apply)

Less costly	Easy to search
Easy to get to	Easy to copy
Easy to read	Easy to take notes/annotate
Always available	Other reasons:

H. On how many occasions (including this one) have you used this book in any format during the last 3 months? _____ times.

I. For approximately how many minutes in total have you used this book during the last 3 months? _____ minutes.

J. About how many times in the last 12 months have you used an online book, i.e. a monograph or reference book available on CNet or another computer network? _____ times.

K. In the type of work you are doing now, do you find that paper books or online books help you to be more productive? (Pull-down 7-point scale)

L. Do you find that you are able to produce results of higher quality when you use paper books or online books? (Pull-down 7-point scale)

M. Is there a computer attached to the campus network (by modem or direct link) that you can use whenever you want? Yes /No

N. About how many hours per week do you spend in each of the following online activities?

Email: *Listserves & Newsgroups:* *CLIO-Plus:*

Text/Image/Numeric Data Sources on WWW: *Other WWW:*

O. What is your present primary relationship to Columbia? If *Other*, please specify: (Pull-Down List)

P. What is your primary discipline? If *Other*, please specify: (Pull-Down List)

Q. Your comments about your experience and preferences in using various book formats are appreciated:

R. If you are willing to participate in a brief telephone interview about your use of this book, please provide the following information:

Name:

Email:

Phone #:

Best time to call:

Thank you for assisting with this important research effort.

Enter your email address here if you wish to participate in our monthly raffle for \$50 copycards. If you are a winner, we will notify you on the second Tuesday of the month.

Review of data anomalies in the analysis of responses to this survey led to questions on how responses had been recorded. Unfortunately, in the cases in which pull-down boxes were used (Questions A, B, K, L, O and P), the first option offered was the default response until the problem was corrected in March 1999. In other words, if the respondent did not click on a response, the system recorded the first response (e.g., for

Question B, *research project*) as the answer. Clearly, this distorted the response distribution, as selective non-response to questions is quite common in general. In particular for this questionnaire, it may mean that the highest ratings for paper books for productivity and quality were over-represented (Questions K and L) as well as the demographic cohorts of undergraduate student status and *undetermined* discipline. Similarly, for Question M, *Yes* was the default response, potentially leading to over-statement of respondents' access to networked computers. Reviewing the patterns of responses for other questions toward the end of this questionnaire we found non-response of no more than 10 percent in general.

In late March 1999, the system of brief, pop-up questionnaires began operation. The questions in the long survey were broken down into five distinct questionnaires, with some repetition of questions across the five questionnaires for logical flow. The server randomly offered the scholar one of those five questionnaires when he clicked on the title of any one of the online books except for *The OED*.⁴⁴

Cooperation with these new questionnaires was modest. From March 25th to September 9th, there were 643 hits on these surveys, followed by 507 survey form submissions. Thus, 21 percent of the scholars who got to a survey backed out and did not proceed to the online book on which they had initially clicked. Removing submissions from project team members, we had 436 submissions of the five general brief surveys (not the reference surveys). Of these 177 (41%) had one or more questions answered. Analyzing the data, we found that many of these were filled out minimally.

Cooperation with the request that we be allowed to contact the scholar for a brief interview about their use of online books was low. Almost 54 percent of those submitting questionnaires did not respond to this question. Another 36 percent responded *No*. Less than 11 percent responded affirmatively.

In the following analyses, responses to the long CWeb surveys and the short ones are discussed separately.

CWeb Survey Responses by Online Text Used

Table 51 gives the distribution of the responses to the long CWeb questionnaire among the online books. *The OED* was both the most used of the online books (about 39 percent of total hits) and the one for which the vast majority (two-thirds to three-quarters) of survey responses were returned. The rest of our analyses review responses from users of *The OED* and those from users of the monographic books as a whole.

⁴⁴ We felt that we had sufficient survey responses on *THE OED*.

Online Text Used	9/96 - 6/97		Fall '97		Spring '98		Fall '98		Spring '99	
	No.	%	No.	%	No.	%	No.	%	No.	%
<i>OED</i>	64	75	28	67	47	77	60	63	60	81
<i>Granger's Index to Poetry</i>	1	1	0	0	2	3	3	3	1	1
Garland Reference Works	2	2	2	5	2	3	0	0	2	3
<i>Past Masters</i> Texts	8	9	4	10	4	7	9	9	6	8
CUP Social Work	7	8	3	7	2	3	4	4	2	3
Other CUP Monographs	0	0	1	2	1	2	8	8	1	1
OUP Monographs	2	2	0	0	0	0	5	5	2	3
Simon & Schuster Monographs	NA	0	3	7	1	2	2	2	0	0
Not given	1	1	1	2	2	3	4	4	0	0
TOTAL	85		42		61		95		74	

The distribution of submissions for the short surveys was much different, reflecting the actual hits on these books during the spring 1999 period. (Table 52) The CUP social work books had the most responses per title.

	No.	%
<i>Granger's Index to Poetry</i>	1	*
Garland Reference Works	1	*
<i>Past Masters</i> Texts	50	12
CUP Social Work	87	21
Other CUP Monographs	137	34
OUP Monographs	126	31
Simon & Schuster Monographs	5	1
TOTAL	407	100

Note: Period runs from March 25 through Sept. 7, 1999. * Less than 0.5 percent.

CWeb Survey, The OED

Primary Project for Using The OED

The questionnaire asked the scholar to select the *best description of that work or project*

for which you are using this book and gave a choice of five options. Table 53 gives the distribution of *OED* responses across purposes. Research projects are the major purpose for using the online *OED*. However, this is also the default response for this question, so its true share is unknown.

Work/Project	Fall 1997 (N=28)	Spring 1998 (N=47)	Fall 1998 (N=60)	Spring 1999 (N=60)
Research project*	68%	57%	60%	62%
Class preparation	14%	8%	12%	13%
Current awareness	0%	6%	7%	7%
Other University activity	4%	8%	5%	2%
Other	14%	19%	17%	17%

* Default response.

Ways of Using The OED

The questionnaire asked *What did you do with this book on this occasion? (Select all applicable uses.)* In each period over 80 percent of respondents selected the use of seeking word definitions. Etymology, history of words, and examples of use were also significant in all periods. (Table 54)

Uses	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Definitions	85%	93%	83%	94%
Etymology	56%	36%	57%	51%
Pronunciation	4%	9%	5%	24%
History of words	59%	53%	67%	53%
Examples of Use	41%	53%	52%	49%
Citations for authors	7%	9%	14%	13%
Citations for eras	15%	4%	12%	17%

Forms of The OED Ever Used

The questionnaire offered nine options for *Which forms of this book have you ever used?* Paper copy in the library, online copy in the library, and online copy elsewhere were the most common responses in all of the periods. (Table 55)

Forms Ever Used	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Online copy in library	42%	31%	58%	55%
Online copy elsewhere	77%	71%	60%	57%
Printout from online copy	23%	10%	26%	16%
Download from online	12%	14%	12%	12%
All Online Forms	154%	126%	156%	140%
Library paper copy	54%	67%	60%	55%
My own paper copy	31%	24%	30%	20%
Colleague's paper copy	23%	10%	23%	12%
Photocopy from paper copy	15%	2%	23%	8%
CD-ROM	8%	10%	19%	8%

Preferred Form of The OED

The questionnaire asked *If you have used this book in more than one way, which one do you prefer overall?* The same choices were offered as above.

Preferred Form	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Online copy in library	12%	12%	21%	32%
Online copy elsewhere	40%	57%	49%	47%
Printout from online copy	8%	2%	4%	0%
Download from online	4%	5%	2%	2%
All Online Forms	64%	76%	76%	81%
Library paper copy	20%	12%	7%	6%
My own paper copy	16%	10%	9%	11%
Colleague's paper copy	0%	0%	2%	2%
Photocopy from paper copy	0%	0%	4%	0%
CD-ROM	0%	2%	4%	0%

Responses for *The OED* were distributed as shown in Table 56. The four online-related options accounted for the majority of responses in all periods. Their share increased from 64 percent in fall 1997 to 76 percent in spring and fall 1998 to 81 percent in spring 1999.⁴⁵

⁴⁵ As these respondents were using an online form of *The OED*, they may have been more likely to favor it than the population as a whole.

The questionnaire asked *Referring to the way of using this book that you prefer, why do you like it best? (Select all that apply.)* OED responses were distributed among the options offered as shown in Table 57. *Easy to get to* was the most common response in the first periods, but by fall 1998 *easy to search* had edged it out. *Always available, easy to read* and *less costly* were also significant reasons for OED users.

Reasons for Preference	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Less costly	46%	36%	57%	48%
Easy to get to	71%	73%	72%	70%
Easy to read	32%	48%	64%	37%
Always available	50%	61%	64%	65%
Easy to search	61%	64%	74%	76%
Easy to copy	36%	4%	29%	30%
Easy to take notes/annotate	29%	14%	29%	18%
Other reasons	18%	9%	7%	9%

Preferred Format and Reasons for Preference, The OED

The top reasons for each format being preferred for *The OED* were as shown in Table 58.

Preferred Form	Key Reasons for Form Preference	
Online copy in library	Easy to search Easy to get to	Always available
Online copy elsewhere	Easy to get to Always available	Easy to search Less costly
Printout from online copy	Easy to get to Always available	Easy to read Easy to take notes
Download from online	Few mentions for each reason	
Library paper copy	Easy to read	
My own paper copy	Few mentions for each reason	
Colleague's paper copy	Easy to read Easy to take notes	Easy to search
Photocopy from paper copy	Few mentions for each reason	
CD-ROM	First five reasons	

The prevalence of *easy to get to* and *always available* is consistent with the preference for

online copy used outside the library as long as the respondent has easy access to a computer with a Web browser.

Frequency of Use in Past Three Months, The OED

The questionnaire asked *On how many occasions (including this one) have you used this book in any format during the last three months?* Table 59 gives the distribution of responses by users of *The OED* from fall 1997 to spring 1999. Those responding zero misunderstood the question and presumably meant that they had not used *The OED* in the last three months prior to this occasion.

No. Occasions	No. of Responses				% of Responses			
	Fall 1997	Spring 1998	Fall 1998	Spring 1999	Fall 1997	Spring 1998	Fall 1998	Spring 1999
0	2	2	1	7	7%	4%	2%	12%
1	4	4	12	10	14%	8%	20%	17%
2	3	7	6	2	11%	15%	10%	3%
3-4	4	5	15	6	14%	11%	18%	10%
5-6	5	6	5	8	18%	13%	8%	13%
7-8	0	2	2	1	0%	4%	3%	2%
9-10	4	8	2	7	14%	17%	3%	12%
11-14	0	0	0	1	0%	0%	0%	2%
15-19	1	2	5	2	4%	4%	8%	3%
20-35	2	7	5	5	7%	15%	8%	8%
36-49	1	0	0	1	4%	0%	0%	2%
50-99	2	2	4	4	7%	4%	7%	7%
No response	0	2	3	6	0%	4%	5%	10%

The mean is 10 to 12 occasions for the three months in the various periods. The median number of uses was five in the first two periods and in spring 1999, but only three in fall 1998. The maximum number of uses of *The OED* reported was 50 in fall 1997, 99 in spring 1998 and fall 1998, and 60 in spring 1999. Heavy users of online books may be more likely to notice our questionnaire and ultimately to respond and, hence, to be over-represented in this sample. However, the question asks about use in all formats, not just use of the online format.

Total Usage in Minutes in Past Three Months, The OED

The questionnaire asked *For approximately how many minutes in total have you used this book during the last three months?* Table 60 summarizes the responses. The means and

medians of 20 to 29 minutes are not great amounts of time for using a monograph but they are substantial for using a dictionary. The mean seemed to decline over time, while the median was higher in the fall than in the spring in the two years of the surveying.

	Fall 1997	Spring 1998	Fall 1998	Spring 1999
No. Respondents	27	45	57	54
Mean Minutes	29	25	26	24
Median Minutes	25	20	25	20
Maximum Minutes	60	90	60	90

Frequency of Use of Online Books in Past Year, OED Users

The questionnaire asked *About how many times in the past 12 months have you used an online book, i.e., a monograph or reference book available on CNet or another computer network?* Table 61 summarizes the responses.

	Fall 1997	Spring 1998	Fall 1998	Spring 1999
No. Respondents	27	43	57	53
Mean Uses	14	19	16	21
Median Uses	4	10	10	12
Maximum Uses	99	99	99	99

Both the mean and the median increased over time, with the median tripling from fall 1997 to spring 1998. These responses may not be representative of all users of the online books or of the Columbia community. However, they do suggest increased penetration of online books into the lives of scholars.

Effect of Online Books on Scholarly Work, OED Users

Two key questions asked on all of our questionnaires, other than those distributed in class, seek to determine the effect of book format on scholarly work.

- In doing the type of work for which you used this book, do paper books or online books help you be **more productive**?
- Do you find that you are able to do work of **higher quality** when you use paper books or online books?

The questionnaire offered a range of seven responses from *much greater productivity (quality) with paper* through *no difference* to *much greater productivity (quality) with online plus cannot say*. As noted earlier, the default responses were *much greater productivity (quality) with paper*. Thus the shares those responses received may overstate

their true popularity and that of the paper format. (See Tables 62 and 63.)

Table 62. CWeb Online Survey For <i>The OED</i>: Relative Productivity				
Response	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Cannot Say	11%	6%	12%	10%
Paper Much Greater*	14%	17%	18%	18%
Paper Greater	11%	13%	7%	13%
Paper Somewhat Greater	18%	13%	15%	10%
Sum Paper Better	43%	43%	40%	41%
No Difference	4%	4%	10%	5%
Online Somewhat Greater	32%	23%	15%	18%
Online Greater	7%	17%	15%	15%
Online Much Greater	4%	6%	8%	10%
Sum Online Better	43%	46%	38%	43%
* Default response through mid-March 1999.				

Table 62 gives the distribution of responses to the productivity question. By spring 1999, online was slightly ahead of paper. However, paper had the advantage of being the default response so the actual lead for online books would be somewhat greater.

Table 63. CWeb Online Survey For <i>The OED</i>: Relative Quality of Work				
Response	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Cannot Say	11%	8%	15%	10%
Paper Much Greater*	21%	17%	25%	23%
Paper Greater	7%	4%	12%	10%
Paper Somewhat Greater	14%	11%	3%	17%
Sum Paper Better	42%	32%	40%	50%
No Difference	36%	36%	30%	20%
Online Somewhat Greater	4%	15%	5%	3%
Online Greater	4%	4%	5%	10%
Online Much Greater	4%	4%	5%	7%
Sum Online Better	12%	24%	15%	20%
* Default response through mid-March 1999.				

The distribution of responses to the quality question supports the print format in general, although about a fifth to a third of respondents found no difference in their work quality with the two formats. (Again the *paper much greater* category probably benefits from being the default response.) Online books gained ground modestly from fall 1997 (12%) to spring 1999 (20%). (Table 63)

Table 64 looks at the cross tabulation of the responses to these two questions for users of *The OED* for spring 1998 to spring 1999. In spring 1998, 28 percent of respondents ranked paper books as yielding both greater productivity and greater quality (a response that may be affected by this range including the default value on this online questionnaire). Only one person ranked paper books better for productivity and online books better for quality and one gave the opposite rankings. About 17 percent ranked online books better on both scores. In fall 1998, thirty percent of respondents ranked paper books as yielding both greater productivity and greater quality. About 13 percent ranked online books better on both scores. In spring 1999, again thirty percent of respondents ranked paper books as yielding both greater productivity and greater quality. Half as many ranked online books better for both factors.

Table 64. CWeb Online Survey of Users of <i>The OED</i>: Quality and Productivity				
Productivity	Quality of Work			
	Cannot Say	Better Paper*	No Difference	Better Online
Cannot Say				
Spring 1998	1 (2%)	0	1 (2%)	1 (2%)
Fall 1998	5 (8%)	2 (3%)	0	0
Spring 1999	2 (3%)	1 (2%)	1 (2%)	2 (3%)
Better Paper*				
Spring 1998	1 (2%)	13 (28%)	5 (11%)	1 (2%)
Fall 1998	1 (2%)	18 (30%)	0	1 (2%)
Spring 1999	3 (5%)	18 (30%)	3 (5%)	1 (2%)
No Difference				
Spring 1998	0	1 (2%)	0	1 (2%)
Fall 1998	2 (3%)	0	4 (7%)	0
Spring 1999	0	1 (2%)	2 (3%)	0
Better Online				
Spring 1998	2 (4%)	1 (2%)	11 (23%)	8 (17%)
Fall 1998	1 (2%)	4 (7%)	10 (17%)	8 (13%)
Spring 1999	1 (2%)	10 (17%)	6 (10%)	9 (15%)

* Default response through mid-March 1999.

Columbia Cohort of Respondents, The OED

The questionnaire asked a respondent to select one of several statuses offered as that representing his present primary relationship to Columbia University. (Table 65) In each period undergraduates were over six-tenths of respondents with graduate students a distant second. (The share of undergraduates may be overstated, as this was the default response.) This is consistent with the server data on *OED* user status.

Columbia Status	No. of Responses				% of Responses			
	Fall '97	Spring '98	Fall '98	Spring '99	Fall '97	Spring 1998	Fall '98	Spring '99
Undergraduate*	21	35	46	37	75%	74%	77%	62%
Graduate Student	4	5	7	15	14%	11%	12%	25%
Faculty	2	2	3	2	7%	4%	5%	3%
Non-Faculty Officer	0	3	1	1	0%	6%	2%	2%
Staff	0	1	1	2	0%	2%	2%	3%
Special Student	1	0	1	0	4%	0%	2%	0%
Other	0	1	1	3	0%	2%	2%	5%

* Default response through mid-March 1999.

Discipline of Respondents, The OED

The questionnaire asked a respondent to select one of 16 disciplines (including *Other*) as that defining his scholarly focus. (Table 66)

Discipline	No. of Responses				% of Responses			
	Fall '97	Spring '98	Fall '98	Spring '99	Fall '97	Spring '98	Fall '98	Spring '99
Undetermined	14	18	26	37	50%	38%	43%	62%
Architecture	1	0	2	1	4%	0%	3%	2%
Art	0	4	2	4	0%	8%	3%	7%
Business	2	1	2	0	7%	2%	3%	0%
Computer Science	1	2	2	3	4%	4%	3%	5%
Engineering	1	4	6	2	4%	8%	10%	3%
Health Sciences	1	4	0	0	4%	8%	0%	0%
History	3	1	3	2	11%	2%	5%	3%
Humanities	5	13	17	11	18%	28%	28%	18%

* Default response through mid-March 1999.

Undetermined probably had an overstated share, as that was the default response until March 1999. The cross-tabulation of Columbia status and discipline in spring 1999 found that 26 of the 37 scholars with an *undetermined* discipline had an undergraduate status and the converse. If these data were accurate, 70 percent of the undergraduate users were freshmen and sophomores. Given that the online *OED* is used in the Logic and Rhetoric course that undergraduates take early in their college careers that is certainly possible. More likely the default response situation led to overstatement of these statuses.

CWeb Surveys, Monographic Books

From fall 1997 through spring 1999, the online books server delivered a moderate length questionnaire to monograph users who took the step of clicking on a survey button at the Title Page – Table of Contents for a book. From late March 1999, the server delivered one of five short questionnaires to scholars who clicked on a link to one of the monographic books.⁴⁶ Each of those five forms included a subset of the questions on the longer questionnaire. The responses to both types of questionnaires are discussed below.

Primary Project for Using Book, Monographic Books

The questionnaire asked the scholar to select the *best description of that work or project for which you are using this book* and gave a choice of the five options listed in Table 67. Class preparation was the most common reason for using online monographs.

Work/Project	Fall 1997 (N=11)	Spring 1998 (N=8)	Fall 1998 (N=28)	Spring 1999	
				Long (N=11)	Short (N=99)
Research project*	18%	38%	43%	36%	35%
Class preparation	45%	50%	43%	46%	21%
Current awareness	36%	0%	0%	9%	22%
Other University activity	0%	0%	7%	0%	8%
Other	0%	12%	7%	9%	13%

* Default response through mid-March 1999. For the short questionnaire, 130 respondents were asked this question and 99 responded.

Ways of Using Book, Monographic Books

The questionnaire asked *What did you do with this book on this occasion?* (Select all applicable uses.) The use of books ranged across those offered, with *reading less than 10 percent of the book* the most commonly mentioned. (Table 68)

⁴⁶ The longer questionnaire was still in place but virtually no one responded to it for the monographs.

Table 68. CWeb Online Survey Responses: Uses of Monographs					
Uses	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
Look up something	1	1	3	3	4
Search for something	1	0	2	3	6
Look at citations	1	1	4	0	3
Look at Table of Contents &/or Index	3	1	7	2	4
Look at Introduction &/or Conclusions	1	4	5	3	3
Look at graphics	0	0	0	0	2
Read a fraction of the book:		4	12	5	
Less than 10%	6	2	10	2	1
10-30%	4	2	8	3	9
Over 30%	0	3	3	2	7
Non-response	1	1	7	4	59
Other	1	1	1	0	0
Responding Cases	11	6	18	9	17

Forms of This Book Ever Used, Monographs

The questionnaire asked *Which forms of this book have you ever used?* It offered the scholar nine options. Responses ranged widely over the options offered. (Table 69) A substantial share of the respondents had used a paper copy of this book at some point, with many having used their own copies.

Forms Ever Used	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
Online copy in library	62%	14%	40%	12%	46%
Online copy elsewhere	12%	43%	40%	50%	12%
Printout from online copy	12%	14%	15%	38%	25%
Download from online	12%	43%	5%	12%	17%
Total Online Forms	98%	114%	100%	112%	100%
Library paper copy	38%	14%	25%	0%	12%
My own paper copy	25%	43%	40%	25%	12%
Colleague's paper copy	12%	29%	5%	12%	4%
Photocopy from paper copy	38%	0%	0%	38%	21%
CD-ROM	0%	0%	0%	0%	12%
Responding Cases	8	7	20	8	24

Preferred Form of This Book, Monographs

The questionnaires asked *If you have used this book in more than one way, which one do you prefer overall?* The same choices were offered as above. (Table 70) A reader might not have used more than one format, so many may have skipped this question legitimately.

Preferred Form	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
Online copy in library	33%	25%	13%	0%	15%
Online copy elsewhere	11%	0%	20%	29%	12%
Printout from online copy	0%	25%	20%	14%	19%
Download from online	22%	0%	7%	0%	15%
All Online Forms	66%	50%	60%	43%	61%
Library paper copy	22%	25%	0%	0%	8%
My own paper copy	11%	25%	40%	43%	23%
Colleague's paper copy	0%	0%	0%	0%	0%
Photocopy from paper copy	0%	0%	0%	14%	8%
CD-ROM	0%	0%	0%	0%	0%
Responding Cases	9	4	15	7	26

The four online-related options accounted for the majority of responses in the first three periods and in short survey responses in spring 1999 (61%), but only for 43 percent of the long questionnaire responses in spring 1999. The share of *my own paper copy* increased four fold from fall 1997 to spring 1999 (from 11% to 43%) on the long questionnaire. Its share for the short questionnaire in spring 1999 was only 23 percent. Preferred form may be related to previous forms used and the reason for using the book. For example, if a book were a collection of essays used heavily in a course, a scholar might prefer to use his own paper copy. On the other hand, if he were simply browsing a book or reading a relatively small part of one, he might prefer an online form.

The questionnaire asked *Referring to the way of using this book that you prefer, why do you like it best? (Select all that apply.)* The responses ranged widely over the reasons offered. (Table 71)

Table 71. CWeb Online Survey: Reasons for Monographic Form Preference					
Reasons for Preference	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
Less costly	5	7	11	5	10
Easy to get to	8	5	12	6	9
Easy to read	2	3	7	4	6
Always available	8	5	11	5	14
Easy to search	5	3	9	5	8
Easy to copy	5	4	4	4	2
Easy to take notes/annotate	6	3	11	4	8
Other reasons	1	2	1	2	0
Responding Cases	11	8	21	9	30

Preferred Format and Reasons for Preference, Monographs

The top reasons for each format being preferred for monographs from spring 1998 to spring 1999 were as shown in Table 72. The popularity of *easy to get to* and *always available* were consistent with the preference for *online copy used outside the library* as long as the respondent had easy access to a computer with a Web browser.

Table 72. CWeb Online Survey: - Preferred Monographic Form and Key Reasons for Preference	
Preferred Form	Key Reasons for Form Preference
Online copy in library	All mentioned about equally
Online copy elsewhere	All

Table 72. CWeb Online Survey: - Preferred Monographic Form and Key Reasons for Preference		
Preferred Form	Key Reasons for Form Preference	
Download from online	All mentioned equally on short questionnaire (except note taking ease)	
Printout from online copy	All	
Library paper copy	Easy to read Less costly	Easy to take notes
My own paper copy	All but Less costly	
Colleague's paper copy	Not preferred	
Photocopy from paper copy	Not preferred	
CD-ROM	Not preferred	

Frequency of Use in Past Three Months, Monographs

The questionnaire asked *On how many occasions (including this one) have you used this book in any format during the last three months?* Anyone responding zero misread the question and presumably meant that this was his/her first occasion to use this book in this period. Few of the respondents had used this monograph in the three-month period preceding this use.

Table 73. CWeb Online Surveys: Frequency of Use of This Monograph over Past Three Months										
No. Times	No. of Responses					% of Responses				
	Fall 1997	Spring 1998	Fall 1998	Spring 1999		Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short				Long	Short
0	2	2	5	1	23	18%	25%	18%	9%	21%
1	4	5	11	3	16	36%	62%	39%	27%	14%
2	2	0	3	1	2	18%	0%	11%	9%	2%
3-4	1	0	2	2	4	9%	0%	7%	18%	4%
5-6	1	1	2	2	0	9%	12%	7%	18%	0%
No response	1	0	5	2	66	0%	0%	18%	18%	59%
Mean	1.6	1.4	1.4	2.7	0.8					
Median	1	1.0	1.0	2.0	0.5					
Maximum	5	6	5	6	4					

Total Usage in Minutes in Past Three Months, Monographs

The questionnaire asked *For approximately how many minutes in total have you used this*

book during the last three months? As Table 74 shows, the response pattern for this question, which includes minimum usage of zero minutes in most periods, indicates that some unknown share of respondents did not include the current use in their tally of time spent using this book. Usage time for these books declined substantially in the most recent period. The short questionnaire was presented to the user before the use of the online book, so that use would not be included in this count. Thus, the zero-minutes median makes sense in conjunction with the modest number of previous uses of this book in that three-month period.

Table 74. CWeb Online Surveys: Minutes of Use of This Monograph over Past Three Months					
	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
No. Respondents	10	7	21	9	44
Mean Minutes	28	17	25	15	19
Median Minutes	24	12	20	12	0
Maximum Minutes	60	50	65	30	240

Frequency of Use of Online Books in Past Year, Monograph Users

The questionnaire asked *About how many times in the past 12 months have you used an online book, i.e., a monograph or reference book available on CNet or another computer network?* The typical respondent to the online survey had used an online book only once or twice in the last year, but spring 1999 brought a somewhat higher level of previous use with both the long and the short surveys.

Table 75. CWeb Online Surveys: Uses of Online Books in Previous Year					
	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
No. Respondents	10	7	28	8	143
Mean Uses	5.0	3.6	2.6	12.0	4.3
Median Uses	1	2	1	2	1
Maximum Uses	20	10	15	50	50

Effect of Online Books on Scholarly Work, Monographs

Two key questions asked on all of our questionnaires, other than those distributed in class, seek to determine the effect of online books on scholarly work.

- In doing the type of work for which you used this book, do paper books or online books help you be **more productive**?
- Do you find that you are able to do work of **higher quality** when you use paper

books or online books?

The questionnaire offered a range of seven responses from *much greater productivity (quality) with paper* through *no difference* to *much greater productivity (quality) with online* plus *cannot say*. As noted earlier, until March 1999, the default responses were *much greater productivity (quality) with paper*.

By fall 1998 the share of respondents who felt that they were more productive with paper books had declined to half, while about one in five felt they were more productive with online books and another one in five could not say. (Table 76) The 28 short survey responses in spring 1999 favored the online format – 43 percent for online versus 26 percent for paper.

Response	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
Cannot Say	9%	12%	21%	18%	28%
Paper Much Greater*	27%	0%	36%	36%	3%
Paper Greater	36%	12%	14%	9%	9%
Paper Somewhat Greater	9%	25%	0%	9%	9%
Paper Better	72%	37%	50%	54%	22%
No Difference	0%	12%	7%	9%	6%
Online Somewhat Greater	0%	12%	7%	9%	22%
Online Greater	18%	25%	14%	0%	9%
Online Much Greater	0%	0%	0%	9%	12%
Online Better	18%	37%	21%	18%	44%
Number of Cases	11	8	28	11	32
* Default response through mid-March 1999. Detail may not sum to total due to rounding. 65% of the respondents to the short questionnaire did not answer this question.					

Responses to the quality question support both formats less, with paper gaining ground and online losing ground over time. Roughly equal numbers of respondents (about one-fifth) were indifferent or could not say which was better on the long survey. (Table 77) Over half of the respondents to the short survey responded *cannot say*.

Response	Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short
Cannot Say	18%	12%	21%	18%	55%
Paper Much Greater*	9%	0%	36%	36%	3%
Paper Greater	18%	0%	4%	0%	3%
Paper Somewhat Greater	9%	0%	4%	9%	16%
Paper Better	36%	0%	44%	45%	22%
No Difference	18%	50%	21%	18%	19%
Online Somewhat Greater	18%	25%	14%	0%	0%
Online Greater	0%	12%	0%	0%	0%
Online Much Greater	9%	0%	0%	9%	3%
Online Better	27%	37%	14%	9%	3%
Responding Cases	11	8	28	10	31

* Default response through mid-March 1999. Detail may not sum to total due to rounding. 66% of the respondents to the short questionnaire did not answer this question.

Table 78 looks at the cross tabulation of the responses to the quality and productivity questions for users of monographs who responded to the surveys from spring 1998 to spring 1999. In spring 1998, all three respondents to the long questionnaire (43%) who ranked paper books higher for productivity found no difference in quality of output between the two formats. Another three ranked online books better on both scores. In fall 1998, 11 (39 percent) respondents rated paper books better on both counts and 11 percent rated online books better for both quality and productivity. (Nine of the 11 in the first instance were in the *paper much greater* category for both quality and productivity – the default responses for these two questions through mid-March 1999. This phenomenon persisted in spring 1999 with four of the ten respondents ranking *paper much greater* on both.)

Productivity	Quality of Work			
	Cannot Say	Better Paper	No Difference	Better Online
Cannot Say				
Spring 1998	1 (12%)	0	0	0
Fall 1998	6 (21%)	0	0	0
Spring 1999: Long	1 (10%)	0	0	0
Short	8 (26%)	0	1 (3%)	0

Table 78. CWeb Online Survey of Users of Monographs: Quality and Productivity				
Productivity	Quality of Work			
	Cannot Say	Better Paper	No Difference	Better Online
Better Paper				
Spring 1998	0	0	3 (37%)	0
Fall 1998	0	11 (39%)	2 (7%)	1 (4%)
Spring 1999: Long	1 (10%)	5 (50%)	0	0
Short	3 (10%)	4 (13%)	0	0
No Difference				
Spring 1998	0	0	1 (12%)	0
Fall 1998	0	0	2 (7%)	0
Spring 1999: Long	0	0	1 (10%)	0
Short	1 (3%)	0	1 (3%)	0
Better Online				
Spring 1998	0	1 (4%)	0	3 (37%)
Fall 1998	0	1 (4%)	2 (7%)	3 (11%)
Spring 1999: Long	0	0	1 (10%)	1 (10%)
Short	5 (16%)	3 (10%)	4 (13%)	1 (3%)

Columbia Cohort of Respondents - Monograph Users

The long questionnaire asked a respondent to select one of several statuses offered as that representing his present primary relationship to Columbia University. Through mid-March 1999, the default response was *undergraduate*. This makes the great share of undergraduate responses suspect. The short questionnaires did not ask this question. These data for those respondents are taken from Columbia databases for students and personnel, just as they are for the server data analyses. (Table 79)

Discipline of Respondents – Monograph Users

The long questionnaire asked a respondent to select one of 16 disciplines (including *Other*) as that defining his scholarly focus. Many of the undergraduate respondents may not yet have selected a discipline. However, *Undetermined* was also the default response for this question and that response had a larger share of responses than *undergraduate* had for the CU status question (86% vs. 64% in fall 1998). (Table 80)

Columbia Status	No. of Responses					% of Responses				
	Fall 1997	Spring 1998	Fall 1998	Spring 1999		Fall 1997	Spring 1998	Fall 1998	Spring 1999	
				Long	Short				Long	Short
Undergrad Student*	5	3	18	7	147	46%	38%	64%	64%	37%
Graduate Student	4	3	7	3	124	36%	38%	25%	27%	31%
Faculty	0	0	2	1	28	0%	0%	7%	9%	7%
Non-Fac. Officer	1	0	0	0	29	9%	0%	0%	0%	7%
Staff	0	0	0	0	70	0%	0%	0%	0%	18%
Special Student	1	1	1	0	NA	9%	12%	4%	0%	NA
Other	0	1	0	0	NA	0%	12%	0%	0%	NA

* Default response through mid-March 1999. Status of 38 (9%) of respondents was not available in databases.

Discipline	Number of Responses				% of Responses			
	Fall 1997	Spring 1998	Fall 1998	Spring 1999	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Undetermined	10	6	24	6	91%	75%	86%	55%
Art	0	1	0	0	0%	12%	0%	0%
Engineering	0	0	0	1	0%	0%	0%	9%
Health Sciences	1	1	0	0	9%	12%	0%	0%
History	0	0	0	2	0%	0%	0%	18%
Humanities	0	0	4	2	0%	0%	14%	18%

* Default response through mid-March 1999.

The information on the disciplines of the respondents of the short questionnaires in spring 1999 was extracted from their sign-in identification and then from the university database. The disciplines listed are insufficiently matched to those in the pull-down list on the long questionnaire to allow direct comparison. The disciplines with at least 10 respondents to the short questionnaires were:

Discipline	Number of Respondents	Percent of Respondents
Social Work	59	27
Political Science- International Affairs	12	6
Arts & Sciences	58	26
Engineering	10	5
Columbia College	34	16
Medicine	13	3

The Circulating Print Books Surveys

The questionnaire used in the circulating print books is virtually the same as that used online. Of the 136 responses received from April 1997 to June 1999, 105 were from scholars checking out regular circulating books and 31 were from scholars checking out reserve books.⁴⁷ Responses covered 52 titles, 17 of them *Past Masters* texts. Over 58 percent of the responses were for these *Past Masters* texts.

Over 46 percent of respondents used the book for class preparation, another 40 percent for research, and the rest were split among personal interest, other university activity, current awareness, and general other. This distribution of reasons for using the book is generally consistent with that for online books survey respondents.

These respondents used these books in a wide range of ways. Most read between 11 pages and the whole book, with 36 percent reporting reading two to five chapters. Only 10 percent reported photocopying any portion of the book with two to five chapters the most common quantity. About 19 percent took notes on paper and 7 percent took notes on a computer.

Patterns of use varied between the circulating books and the reserve books. One-third of the respondents with circulating books read over five chapters while only one-sixth of borrowers of reserve books read that much of the book in question. Only one of the 31 reserve book borrowers photocopied any of the book, while ten of the 104 circulating book borrowers did so. A third of the circulating book users took some form of notes, while only two of the reserve book borrowers reported doing so.

Since these respondents had all borrowed a library print copy, it was to be expected that virtually all would report having used that format in the past three months. Ten or fewer of the 130 respondents answering this question had used any other format of this book in that period. Online copy in the library and online copy elsewhere were formats reported by four scholars each; no one reported using any other online format (printout or download). Respondents were asked to report on their favorite format if they had used

⁴⁷ For the last year hardly any reserve book questionnaires were received although reserve desk staff were reminded repeatedly of the need to distribute them.

more than one. Over 69 percent of the 85 scholars responding to this question listed *library's paper copy*; another 23 percent listed *my own paper copy*. No one listed an online format.

The most common reason checked for that preference was *easy to read* (51%) with *less costly* (43%) second most common. About half of those favoring *library's paper copy* checked each of these reasons. *Easy to take notes or annotate* and *always available* were each checked by about half of those favoring a personal paper copy.

These respondents had used these books quite extensively in the past three months. The mean number of uses was 2.8 uses and the median 2.0 uses, with the maximum number of uses 20. The amount of time these books had been used was also quite high – a mean of 173 minutes, a median of 120 minutes, and a maximum of 1,200 minutes (20 hours).

Almost 78 percent of these respondents had not used an online book at all in the past year. One had used online books 25 times. In brief, the respondents to the surveys distributed to users of print books were not users of online books in general.⁴⁸

The responses to the questions on relative productivity and quality of work done with paper books and online books were heavily skewed to paper. Over half of the respondents thought that paper books resulted in both better productivity and better quality. (Remember that less than one quarter of these respondents had used an online book in the previous year. Most of them had probably never used an online book so they had no basis on which to make a judgment on relative productivity and quality of work with the two formats.) Another 24 percent reported that they did not know which was better for both features.

ACCESS TO ONLINE RESOURCES

The questionnaires all asked about respondents' access to online resources, by asking if they had access to a networked computer whenever they wanted. Unfortunately, the default response to this question was *yes* until mid-March 1999.

In fall 1997, 96 percent of the online responses for *OED* users were affirmative, in spring 1998, all of them were, in fall 1998, 95 percent were, and in spring 1999, 93 percent were. In fall 1997, 73 percent of the online responses for monograph users were affirmative; from spring 1998 to spring 1999, all of the responses were affirmative.

In spring 1998, 73 percent of the respondents to the in-class surveys claimed such ready access (with 16 percent answering negatively and 11 percent not responding). In fall 1998, 82 percent responded affirmatively. In spring 1999, 86 percent did so. These

⁴⁸ The distribution of use of online books by scholars who had used online books was not substantially different. Most of them had not used an online book more than once or twice either. The first time online book user, a most common individual with this new technology, would not have used an online book at all previously.

students were likely to be more reflective of the student body as they were not self-selected respondents to an online survey (and their data are free of default response bias).

About 78 percent of the respondents to the surveys on circulating and reserve books responded affirmatively.

From fall 1997, the in-class and paper surveys also asked whether the students had ready access to a computer with a graphic Web browser (necessary for use of the online books). In fall 1997, 83 percent of the in-class survey respondents answered affirmatively, in spring 1998, 75 percent did, in fall 1998, 81 percent did, and in spring 1999, 88 percent did. These responses are not altogether consistent as the networked computer condition is less restrictive than the access to a graphic Web browser so anyone responding affirmatively to the latter should also have done so for the former.

Two fewer respondents to the surveys on circulating and reserve books answered affirmatively to this question than did to the previous one.

TIME IN ONLINE ACTIVITIES

The questionnaires asked how many hours each week a respondent spent on average in various online activities. Table 81 summarizes *OED* users' responses to this question from the online survey and Table 82 does the same for monograph users.

Hours/Week in Online Activities	No. of Respondents				% of Respondents			
	Fall 1997	Spring 1998	Fall 1998	Spring 1999	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Up to 4	5	9	17	9	2%	20%	30%	17%
5 - 9	8	10	14	15	14%	23%	25%	29%
10 - 14	5	10	5	14	9%	23%	9%	27%
15 - 19	4	4	6	4	14%	9%	10%	8%
20 - 24	1	1	6	5	12%	2%	10%	10%
25 - 29	1	1	2	1	12%	2%	4%	2%
30 - 34	1	3	2	1	4%	7%	4%	2%
35 or more	2	6	5	3	32%	14%	9%	6%
Mean	13.2	17.4	14.2	12.7				
Median	10.0	10.0	8.0	10.0				
Maximum	40	73	90	47				

In fall 1998, the distribution of the number of hours online slid into the lower ranges for *OED* users, while monograph users reported greater hours online than they had a year

earlier.⁴⁹ This may suggest a broadening of the user base for the online *OED*.

Hours/Week in Online Activities	No. of Respondents				% of Respondents			
	Fall 1997	Spring 1998	Fall 1998	Spring 1999	Fall 1997	Spring 1998	Fall 1998	Spring 1999
Up to 4	2	0	4	2	18%	0%	19%	22%
5 - 9	4	2	4	3	36%	25%	19%	33%
10 - 14	3	1	6	1	27%	12%	29%	11%
15 - 19	0	1	1	1	0%	12%	5%	11%
20 - 24	2	3	3	1	18%	38%	14%	11%
25 - 29	0	0	2	0	0%	0%	10%	0%
30 - 34	0	1	1	1	0%	12%	5%	11%
Mean	10.3	16.7	13.3	12.1				
Median	9.0	17.5	11.0	9.0				
Maximum	40	32	32	30				

Responses to Questionnaire with Paper *OED*

The *OED* is available to the Columbia community in paper form in several of the libraries. Initially in two locations in Butler Library those volumes were stuffed with a paper questionnaire asking the same questions as the online questionnaire. However, in early 1998 as part of the Butler renovation, the main set was relocated. In January 1998 one user responded to the survey, thereafter no one did. Thus, this survey was no longer active in 1998 and 1999.

In 1996, 11 users of the paper *OED* responded to the question about online activity. In 1997 and January 1998, 20 of 79 respondents answered this question. In 1996 they reported mean weekly time in online activities of 3.9 hours; in 1997/98, that mean was 8.4 hours. In the latter period, the median was 6.5 hours and the maximum reported was 28 hours. Thus, on average users of the paper *OED* spent about a third less time in online activities than did users of the online books.

Responses to In-Class Questionnaire

The in-class questionnaire also asked about weekly hours in online activities. In fall 1997, the mean number of hours for the 71 respondents was 6.1 and the median five hours. Thus, they spent on average only half as much time online as the respondents to

⁴⁹ The responses to the brief pop-up questionnaires from spring 1999 are omitted from the analysis as they were very few in number and inconsistent in number across this set of questions.

the online questionnaire did. In fall 1998, the mean for 112 respondents was 7.4 hours, or up 21 percent from the previous year. In spring 1999, the mean for 182 respondents was 8.6 hours and the median six hours. Over this study period, the mean number of hours increased 41 percent and the median twenty percent.

The in-class survey mean in spring 1999 was over 44 percent less than the mean for respondents to the online survey. Users of online books, or at least respondents to online surveys, were much heavier users of the Internet than the general population of scholars.

COST ANALYSES: PRINT & ONLINE BOOKS

A key facet of the Online Books Project was analysis of the lifecycle costs of scholarly books in print and online format. What does it cost to publish and provide these books to scholars via libraries? Would online books be more or less costly than the traditional print format? Do scholars face different costs based on format used?

The online format has developed slowly; as a result the industry of online publishing and the terms of providing online books are still in their infancy. With technology continually evolving as well, the various systems for and costs of publishing, distributing, maintaining, and owning online books are also at the beginning of their developmental cycles. Nor for that matter is it traditional to measure lifecycle costs for print books. But the available evidence does permit order-of-magnitude comparisons.

As we noted in the *Executive Summary*, at the beginning of this project we expected that the online book element of the scholarly publishing industry would develop so that (1) publishers would modify their processes for developing books to incorporate the creation of online books into the work flow at modest incremental cost; and (2) the market for online books would mirror that for print books, i.e., individual libraries would maintain collections of online books on their own servers, handle cataloging as they do now, and so on. As we observed the development of the online publishing industry over the last five years and analyzed the stream of cost from author to consuming scholar, we decided that the original model was unrealistic and not the one to use in our cost analyses.

The model that seems more likely to pertain is one in which publishers would incorporate production of online book files in their standard production process, somewhere between the author's initial creation of a manuscript in a word processing program and the typesetter's creation of the film for offset printing. Indeed, this last step might be eliminated for a class of low demand books for which desktop publishing and print-on-demand model might become standard. Then publishers or vendors would develop collections of online books that they would maintain on central servers and offer as titles or groups of titles to libraries or individual scholars. Some publishers, e.g., Chadwyck-Healey, have begun to offer online texts in this way. NetLibrary is the first major vendor to enter the general library book market.⁵⁰

⁵⁰ NetLibrary converts books from paper or from electronic files to their proprietary secure

As the publishing process for which we have cost data has not progressed to the point of making online books a standard output, our model assumes conversion of a print book, ASCII or other file format to HTML or SGML⁵¹ as an add-on cost to the traditional publishing process. An alternative system, which the University of Pennsylvania is employing in a project to mount OUP books, involves distilling PostScript files into PDF files with Adobe Acrobat and reassembling the chapters into a single file. A plugin (Compose) is used to build bookmarks and links from the back of the book index to the pages.⁵²

After conversion of the book would come cataloging, creating of a permanent URL, maintaining on a central server, and transmitting to the reader via the Web or an alternative secured Internet mode. An alternative system for providing some electronic books, e.g., textbooks, might be CD-ROM or DVD.

Print Books – Analysis of Costs to Publishers

Exhibit 3 gives pro forma revenues and costs for five different scholarly monographs from a major university press and estimates of the costs of producing and maintaining online versions of those books. At the outset we should note that these five books were expected to have large sales compared to the specialized scholarly monographs about which there has been so much concern in recent years. These books were projected to have sales of several thousand units each, while most scholarly monographs are lucky to sell more than 500 copies. (This topic is discussed more at the end of this report.) In addition, these books were being published by one of the larger university presses and, hence, should have enjoyed relative economies of scale from that operation. In short, these are examples of relatively successful scholarly books, not the sort that are losing money every day.

We analyzed the revenue and costs for these books in print form and related data at length in a 1998 white paper on the economics of scholarly communication.⁵³ These findings will be summarized here, followed by a discussion of the estimated costs of producing the incremental online version of these books.

format at considerable cost. Their experience reflects ours in finding that the scholarly publishing industry has not yet developed a conversion-friendly production process.

⁵¹ If a book were marked up in SGML, the standard system is to then convert it to HTML for Web viewing *on the fly*. John Price-Wilkin at the University of Michigan pioneered this system and has written about its benefits.

⁵² Roy Heinz, Director, Information Systems, University of Pennsylvania Library, provided information on their process for conversion and the costs that they are experiencing.

⁵³ Mary Summerfield, *Issues in the Economics of Scholarly Communication. A White Paper Supporting The Andrew W. Mellon Foundation-Funded Projects – The Online Books Evaluation Project & Columbia International Affairs Online*, Revised March 1998. This paper is available online at: <http://www.columbia.edu/cu/libraries/digital/texts/econpap.html>.

Exhibit 3. Scholarly Book Publishing: Projected Revenues & Costs

Sample of Books in Print & Electronic Format

	Book 1	Book 2	Book 3	Book 4	Book 5	All 5 Books
Book Pages	296	320	300	232	280	1,428
Cloth Copies Printed (#)	1,000	500	500	1,500	400	3,900
Cloth Copies Sold (#)	900	400	450	1,350	350	3,450
% Sold of Printed Copies	90%	80%	90%	90%	88%	88%
List Price - Cloth	\$45.00	\$42.00	\$50.00	\$32.50	\$49.50	\$43.80
Net Margin - Cloth	80%	80%	75%	65%	80%	76%
Net Price - Cloth	\$36.00	\$33.60	\$37.50	\$21.13	\$39.60	\$33.29
Net Income - Cloth	\$32,400	\$13,440	\$16,875	\$28,519	\$13,860	\$105,094
Paper Copies Printed (#)	0	2,500	3,500	na	3,000	na
Paper Copies Sold (#)	0	2,300	3,300	1,800	2,800	10,200
% Sold of Printed Copies	na	92%	94%	nc	93%	na
List Price - Paper	na	\$17.50	\$15.50	\$17.50	\$17.50	\$17.00
Net Margin - Paper	na	65%	75%	77%	80%	74%
Net Price - Paper	na	\$11.38	\$11.63	\$13.48	\$14.00	\$12.62
Net Income - Paper	\$0	\$26,163	\$38,363	\$24,255	\$39,200	\$127,980
Total Copies Printed	1,000	3,000	4,000	na	3,400	na
Total Copies Sold	900	2,700	3,750	3,150	3,150	13,650
Total Net Income	\$32,400	\$39,603	\$55,238	\$52,774	\$53,060	\$233,074
Costs						
Plant (Typesetting)	\$4,903	\$4,962	\$5,936	\$4,085	\$4,089	\$23,975
Paper, Printing, Binding	\$3,633	\$7,451	\$7,887	\$8,312	\$8,015	\$35,298
Royalty - % cloth	0%	7%	10%	7%	7%	6%
Royalty - % paper	na	7%	10%	7%	7%	8%
Royalty Amount	\$0	\$2,772	\$5,524	\$3,694	\$3,714	\$15,704
Others (Contributors Payments, etc.)	\$0	\$0	\$3,600	\$0	\$0	\$3,600
Total Cost of Sales	\$8,536	\$15,185	\$22,947	\$16,091	\$15,818	\$78,577
Gross Margin (Income-Cost of Sales)	\$23,864	\$24,417	\$32,291	\$36,683	\$37,242	\$154,496
Fixed Overhead	\$11,268	\$11,268	\$16,179	\$16,179	\$11,268	\$66,162
Variable Overhead	\$10,692	\$13,069	\$18,228	\$16,168	\$17,509	\$75,666
Total Overhead	\$21,960	\$24,337	\$34,407	\$32,347	\$28,777	\$141,828
Total Cost (of Sales + Overheads)	\$30,496	\$39,522	\$57,354	\$48,438	\$44,595	\$220,405
Surplus (Total Net Income -	\$1,904	\$80	-\$2,116	\$4,336	\$8,465	\$12,668

Total Cost)

Source: Major University Press. This press reports stability in these costs.

Electronic Book Production Costs

Using Print Text: Scan, OCR, Encoding, All Proofing (UMI-HTI): ~\$1.51/pg.	\$447	\$483	\$453	\$350	\$423	\$2,156
Using E-Files:						
HTML coding for Ascii pg: \$0.36/1K char.: ~\$1/pg.	\$296	\$320	\$300	\$232	\$280	\$1,428
HTML coding for Quark pg:~\$2.15/pg.	\$636	\$688	\$645	\$499	\$602	\$3,070
E-File Proofing & Finetuning, Graphics: ~\$0.42/pg.	\$124	\$134	\$126	\$97	\$118	\$600
PostScript to PDF for Web:\$0.04/pg. (best case)	\$12	\$13	\$12	\$9	\$11	\$57
E-File Management: ~\$1,000 for contract for 50 books	\$20	\$20	\$20	\$20	\$20	\$100
Total Cost of Maintaining Books on Server: ~\$1/MB/yr.: ~44pg/MB w/graphics:~\$0.023/pg/yr. PV:~\$0.35/pg for 30 yrs.	\$104	\$112	\$105	\$81	\$98	\$500
Cataloging (CU)	\$25	\$25	\$25	\$25	\$25	\$125
Costs of Online Version for 30 year period (except refreshing & migrating):						
Print to SGML	\$596	\$620	\$583	\$457	\$546	\$2,881
Ascii to HTML	\$569	\$591	\$556	\$436	\$521	\$2,753
Quark to HTML	\$889	\$959	\$901	\$702	\$843	\$4,395
PostScript to PDF	\$161	\$170	\$162	\$135	\$154	\$782

As Exhibit 3 illustrates, print scholarly communications has high fixed costs and low marginal costs. The cost profile includes the following:

- Moderate to high overhead costs to maintaining the business of publishing (editing, producing, and distributing) a given class of books. Each of these books was assessed a first year fixed overhead charge of \$11,268, but two had an additional second year fixed overhead charge of about \$4,911.⁵⁴ With sales of a few hundred to a few thousand copies, this overhead resulted in a substantial cost

⁵⁴ This press includes most of its internal costs in this fixed overhead category even though some of these costs are variable by book. All general administrative costs (e.g., salaries and benefits, utilities, computing) are assessed here, as are all editorial work of acquisitions and manuscript development, as well as copyediting and costs of warehousing and order fulfillment even though they vary by book.

per unit (\$3.58 to \$12.52). The more successful a book is in the marketplace, i.e., the more copies of a title that are sold, the lower the fixed overhead costs per copy.

- Moderate to high fixed costs for an author to create and for a publisher to select, develop and prepare a manuscript for publication, whether in print or online. Costs included here are plant (the cost of creating film for offset printing – *setting the type*) and part of the fixed overhead.

Plant cost is a function of the length of the manuscript and its complexity; here the cost ranged from about \$4,100 to \$6,000 per book. For a small print run, say 500 copies, the plant cost per copy was over \$8, while for a print run of several thousand copies or more it was \$1 per copy or less.

The variable overhead category in this pro forma analysis includes a range of book-specific design, marketing and sales costs. Economic theory would say that it should also include editorial, warehousing, and order fulfillment costs that could be attributed to each title, but this press does not use this method. In these pro forma estimates, variable overhead ranged from \$10,692 to \$18,228 – or from \$4.84 to \$11.88, with most around \$5, per expected unit of sales. Economies of scale exist for most of these costs; the greater the number of units sold, the less the variable overhead per unit.

- Modest and declining unit costs for actual production (paper, printing, binding – PPB – and jacket or cover) of a book as units produced increase (economies of scale). PPB costs increase with book length, but at a declining rate. These costs are a function of the page count of the book, its format, and the number of copies printed in cloth and paperback at one time. This publisher faced base costs of \$2.15 for 1,000 cloth copies of a 128-page book with a 6 inch by 9-inch format. Color book jackets and paperback covers were costly relative to PPB, even without including design costs. A three-color book jacket or cover cost about \$1.15 for a print run of 1,000 units. Thus, a small book cost over \$3.00 per copy for PPB and cover with a relatively modest press run, but one that could lead to remainders for many scholarly monographs.⁵⁵
- Moderate, variable costs for storing and shipping units of the print book and managing remainders returned by bookstores.
- Modest, variable costs for royalties to authors. For the five books represented by these pro forma statements, royalties ranged from zero to ten percent of net income, and from \$0 to \$5,524.

These pro forma financial statements estimated that this set of five scholarly monographs would sell a total of 13,650 copies (3,450 cloth copies and 10,200 paper copies) at an average net price to the publisher of \$17. The projected surplus (total net income minus

⁵⁵ Studies have shown that in recent years over half the scholarly monographs published in some fields, e.g., literary criticism, have sold 500 copies or fewer. See Sanford Thatcher, *Crisis in Scholarly Communications*, for one such study at Pennsylvania State University Press.

total cost) for these books was \$12,668, or \$0.93 per copy sold.⁵⁶

Online Books – Analysis of Incremental Costs to Publishers & Vendors

At this time, with few exceptions, online books have been created as a secondary product after the standard production process for print books was completed. Thus, the costs available for analysis are those of converting a print book to online format – generally either by scanning and further processing a print book or by taking an electronic file and converting it to HTML or PDF.

The University of Michigan has extensive experience in the first of these methods as a result of their Humanities Text Initiative. They estimate that the process of scanning, running the scanned text through optical character recognition software, encoding in SGML, and proof reading at all stages costs an average of about \$1.51 per page. This cost does not include management of the project or the cost of information systems.

In mid-1998 Columbia contracted out HTML coding of the electronic files of the books received most recently from the presses cooperating in this project. This coding was done based on a set of standards established by the Columbia digital library editing staff. Some of these files were in ASCII format; others were in Quark. The cost of coding for ASCII was \$0.36 per 1,000 characters or an average of about \$1 per page for this set of books. Quark conversion was more complicated and more than twice as expensive – an average of \$2.15 per page for this set of books. Back at Columbia the process of proof reading the returned files, fine tuning them, and adding graphics cost an average of about \$0.42 per page. Managing the contract for this conversion cost about \$1,000 in staff time, or about \$20 per book.

The University of Pennsylvania has found that in the best of cases, when it receives clean PostScript files that do not include fonts that the software has problems interpreting, its system of converting these files to PDF costs only four cents a page. A student worker can create a final, web-ready PDF file of a 300-page book in an hour. A troublesome book can take five times as long if not more, for a per page cost of twenty cents or more. None of these costs include management supervision or other overhead costs, but it is important to note how much lower they are than those experienced in the two methods just described. This illustrates our basic theory that publishing technology can change to incorporate electronic books at very low cost incremental cost.

Columbia's Academic Information Systems staff calculated the cost of maintaining books on a server, including hardware, software, and related labor, as about \$1 per MB per year. Books vary in size, but with a certain amount of graphics a book might have about 44 pages per MB, for an annual cost of \$0.023 per page per year. If a publisher or vendor were to maintain a book on a server for 30 years, the present value of the cost for those 30 years would be about \$0.35 per page, or roughly \$81 to \$112 for each of the five books in

⁵⁶ This press, like many university presses, receives free space and utilities from its parent university so this analysis does not reflect all economic costs of this enterprise.

our sample.⁵⁷ We do not have estimates of the costs of migrating these books over time, but it might be reasonable to assume that they would be in the same range.

Cataloging an online book when a catalog record for a print version already exists costs about \$25 in staff time. It would be most efficient for publishers or vendors to assume this activity and to provide catalog records to libraries.

As Exhibit 3 shows, the costs of the online version vary with the number of pages in the book as well as the method of conversion. They would also vary with the complexity of the books, that is the amount of graphics, multimedia, and links to other online resources, but we have assumed uniformity on that front in this example. For our sample of five books, the present value of the total lifecycle costs of production and maintenance might be approximately as follows:

	<u>Base</u>	<u>W/Migration</u>
From Print to SGML	\$2,881	\$3,381
From ASCII to HTML	\$2,753	\$3,253
From Quark to HTML	\$4,395	\$4,885
From PostScript to PDF	\$782	\$1,282

Clearly at this time, it is much less costly to convert books from print or ASCII than from a printer's format like Quark. If software and procedures were developed to strip the text of the mark-up features, this cost differential might be eliminated. The PostScript to PDF method seems to win by a tremendous margin. We have not been able to explore the nature of the differences in the utility of the final electronic books resulting from these different methods.

As we noted above, the weighted average net income per copy sold for these five books was projected at about \$17. To cover the incremental costs of producing, maintaining, refreshing, and migrating the online versions of these books, the publisher and vendor would have to sell the following quantities of these books in online format if they were sold at this average price.

	<u>Break-Even Quantity</u>
From Print to SGML	199
From ASCII to HTML	191
From Quark to HTML	287
From PostScript to PDF	75

This \$17 net income is based on the mix of cloth cover and paperback copies of these five titles that this press expected to sell. If the online books were sold at the cloth cover price (a weighted average of \$30.46), the break-even quantity would be much smaller. On the

⁵⁷ This present value estimate assumes a real cost of money of 5 percent per year as well as a 30 year time span. These parameters are used in the later estimates of the lifecycle costs of a book for a library as well.

other hand, if they were sold at the paperback price (a weighted average of \$12.55), the break-even quantity would be much larger. These values are two-thirds or more of the total sales for many esoteric monographs at this time. However, they are much lower than the total projected sales for the five books included in our model.

If the publisher or intermediary charged the purchasing library for the service of maintaining the book online, migrating it regularly, and the like, it might charge the library an annual service charge. (NetLibrary is doing so.) If so, these costs could be recouped over time rather than through initial sales. However, the publisher or intermediary would then be left with the risk that some of the libraries might not continue to want the book and to pay those fees. The vendor would then face the problem of having to spread these fixed costs over the fewer libraries that were paying to support access to the book or losing money on that support.⁵⁸

Libraries' Lifecycle Costs of Print & Online Books

One of the implicit hypotheses behind the Online Books Evaluation Project was that online books would have lower lifecycle costs for owning libraries than print books do. This hypothesis was based on two assumptions: (1) Print books require ever more expensive manpower for acquisition, processing, and circulation as well as the cost of stack space. (2) Online books would take advantage of ever less costly computing hardware and would require less staff time.

In order to test this hypothesis, we estimated the present value of the lifecycle costs for both print books and online books. This method allows the summing of costs that occur in the future with those that occur today by recognizing the value of the money used in the interim. We did so by assuming a 30-year lifetime and a five percent annual real interest rate for each of the cost elements involved in purchasing and owning a book. Exhibit 4 lays out basic cost elements and estimates the costs at Columbia for both types of books.

Selection costs were estimated from a polling of selectors on the amount of time that they and their assistants spent on selecting books each year and spreading the resultant costs over the number of books purchased. This model assumes that the same time would be required for making a decision on the average online book. Thus, a volume in either format would carry a selection cost of about \$3.59.

⁵⁸ The vendor could charge higher rates in the early years than support actual costs (knowing that the book had greater value to the libraries while it was relatively new) and use the excess funds to fund those activities in the later years. The vendor could promise to maintain books that become stale quickly, e.g., programming titles, for only a relatively short period and then take them down when an insufficient number of libraries were willing to support them.

Exhibit 4. Libraries' Lifecycle Costs of Book Ownership		
	Print Book	Online Book
Purchase Price, Average	\$50.00	\$50.00
Selection	\$3.59	\$3.59
Processing:	\$43.67	
Ordering		\$2.00
Locate & Handle Bibliographic Record		\$5.92
Receive Physical Item		\$0.00
Payment		\$2.00
Initial Physical Processing		\$0.00
Cataloguing		\$25.00
Storage	\$4.61	\$0.00
Average Cost of Circulation	\$43.97	\$38.43
Stack Maintenance	\$5.47	
Collection Maintenance	\$1.90	
Repair/Rebind	\$0.28	\$0.00
Replace -- New Book & Processing	\$2.08	\$0.00
Total	\$155.57	\$126.94
<p>Selection: Estimated from share of hours spent by librarians & assistants at relevant salary & fringe rates divided by number of new items. (Assumes average librarian salary of \$45,000; staff assistant salary of \$22,000; and student assistant wage of \$8 per hour.) Most books are purchased via approval plans, not individually selected and ordered.</p> <p>Storage: Present Value of 30 years at \$0.30 per year with 5% interest rate. Malcolm Getz estimated annual cost of storing one volume in off-site storage (the marginal method) as \$0.30.</p> <p>Cost of Circulation for Print: Present Value of 30 years with 5% interest rate at \$2.86 per circulation and an average of one circulation per year.</p> <p>Stack Maintenance: Includes shelfreading, shifting.</p> <p>Collection Maintenance: Includes searching for and tracking missing books.</p> <p>Replace Print Book: 2,500 volumes lost and 116,000 purchased annually: 2.16% loss rate, assumed value replaced over 30 year period in purchase price and processing.</p> <p>The online model assumes that books will be bought via a system with terms negotiated with one or several publishers or intermediaries, e.g., approval plan, user selection & mass availability, user selection & individual availability, etc. Costs of ordering the books will be similar to those via approval plans for print books. However, cataloging costs are estimated at the original cataloging level experienced in the Columbia experiment, rather than at the copy cataloging level that would prevail in the long run.</p>		

At the outset of a contract for a book vendor substantial costs are incurred in management time. However, over time there is little if any cost to negotiations and licensing in purchasing books. Our model assumes that the same would apply for individual online

books.⁵⁹

Ordering, locating, and handling bibliographic records, receiving a physical item, making payments, cataloguing, and initial physical processing are bundled in a Columbia cost analysis. Including overheads, that stream of processes cost an average of \$43.67 per print volume last year.

We assume that online books would be ordered and paid for as groups. These two steps might each cost two dollars per online book. Locating and handling a single bibliographic record takes about 10 minutes time for a professional librarian with a cost of almost six dollars. With online books maintained at a publisher or vendor's site, no physical item would be received or processed. While we advocate the publisher or vendor assuming the activity and cost of cataloguing an online book, we have used the very conservative assumption in this model that cataloging an online book costs the library as much it cost Columbia in this project, e.g., an average of \$25 in librarian salary and benefits. If the publishers or vendors did not take on the cataloging activity or expense, libraries would share the activity and cost such that the cost would be that of copy cataloging not that of original cataloging.

Storage costs for a print book vary with the site of that storage. Malcolm Getz estimated that storing a single book off-site cost about thirty cents. The net present value of such storage for 30 years would be about \$4.61 per book. Online books maintained by a publisher or vendor would have no direct cost of storage for a library.

The average cost of a circulation from Columbia's largest library was \$2.86. With a 30-year lifecycle and an average of one circulation per year, the lifecycle cost of circulating a print book would be almost \$44. Again using the staffing and collection in Columbia's largest library, we have lifecycle costs per volume of about \$5.47 for stack maintenance and \$1.90 for collection maintenance. The average lifecycle costs of repairing and rebinding a book would be about \$0.28. Finally, replacing missing books including the processing costs would have a lifecycle cost per volume in the collection of about \$2.08.⁶⁰

If publishers or vendors maintained online books, a library would incur no direct costs of circulation, stack maintenance, collection maintenance, repair, rebinding, or replacement. However, the vendor might charge the library for providing continuing access. These charges are modeled as five percent of the purchase price for 30 years (or \$2.50 per year for a \$50 books), as that is what we understand netLibrary is charging. The present value

⁵⁹ A recent Columbia analysis found that the current cost in manpower of making the decision to purchase and then acquiring a relatively simple electronic resource averaged around \$1,050. Online books would not be economically viable if that level of costs were incurred for deciding to purchase anything less than hundreds of books.

⁶⁰ The average book is not repaired, rebound or replaced during its lifecycle. These small costs reflect the spreading of the costs of repair and rebinding and replacement over the whole collection.

of this lifecycle cost totals over \$38. Of course, the library would have the opportunity to determine if the book was of continuing value to its community and to discontinue this payment at any time.

If we assume that the purchase prices for both the print book and the online book were \$50, the present value of the total lifecycle stream of costs would be about \$156 for the print copy and \$127 for the online book, for a minimum of a 19 percent savings with the online version.

A scholarly library incurs costs for the Internet and computing infrastructure that allows it to provide electronic resources, such as online journals and books, to its scholars.⁶¹ However, these costs would have been incurred even if the library did not provide online books. Indeed, they are being incurred now and few libraries are providing online books at this time. Thus, we have not included these sunk infrastructure costs in our calculations of the costs of providing individual online books. However, if there were other unique infrastructure costs that an institution would assume in deciding to undertake to provide its community with online books, they should be included in a cost analysis of this sort.

ONLINE BOOKS & TRADITIONS OF SCHOLARLY COMMUNICATIONS & PUBLISHING

As we have explored the concept of online books over the last several years, we have discussed the import of this new way of delivering books on scholars as authors and on the scholarly publishing industry, as well as on scholarly libraries. Several of our previous papers, especially the economics white paper, discussed these issues at length.

Scholars & Promotion

Scholars in the academic world rely on publishing articles and books in order to obtain initial positions and to obtain promotions and tenure. Currently, it is very difficult to find a publisher for the first book that customarily results from a dissertation in most fields in the humanities and social sciences.⁶² At the same time, the academic community requires that book if a young scholar is to obtain a teaching position. A second book is often required for tenure; for most scholars, it is no easier to get that second book published.

Scholars are concerned that the development of online books may result in a two-tier system of publishing and evaluation of scholars' work. Under this scenario, the best books would be offered in a print volume in the traditional method as well as in an online

⁶¹ A college or university uses these resources for many purposes beyond library services.

⁶² The sciences are typically satisfied with a series of articles derived from the dissertation as books are not the key means of scholarly communication in the sciences. The difficulty that humanities and social sciences scholars have in securing a publisher is the result of the economics of publishing that were analyzed briefly earlier. Chances are the publisher will be able to sell only a few hundred copies of the typical monograph and will lose money on this publication. No scholarly publisher can afford to publish many loss-making books in a year.

form. However, most first books and other books deemed to have modest market potential would be offered only in online form initially. Print versions would be produced in a print-on-demand mode until or unless they prove to have high demand. Scholars fear that (1) their books might fall into this second tier; and (2) books in this second tier would be considered second rate by those who make hiring, promotion, and tenure decisions. Absent the *thump factor* of a traditionally printed and bound book, they suspect that their career opportunities would be compromised.

Administrators of scholarly institutions acknowledge the difficulty that young scholars face in getting published. They also assert that they will look upon online publications fairly. However, evidence to date about how they behave is scant.

The creation and wide dissemination of scholarly books in an online form has the potential for greatly increasing the exposure of these books to their communities. At present, methods of learning about the contents of scholarly books are limited to reviews, citations, word of mouth, and the like. None of these is systematically widespread across books and scholars in a field. Given the very limited sales of most monographs, the likelihood that a scholar in a field will see all of the books in that field and related fields is small. However, if newly issued scholarly books (monographs and collections of essays) became generally available online, it could be easy for scholars to do searches for concepts and simply to browse the potentially interesting new books online.⁶³ This should enhance scholars' productivity and the quality of their work as they will have both quicker and more comprehensive access to the literature of their fields. This would especially benefit scholars at institutions that have smaller libraries and those who are involved in distance education programs.

This expansion of access to the scholarly literature would enrich the intellectual dialogue. It could also enhance the profile of a scholar whose work does not become well known under the current system of disseminating knowledge.

Scholarly Publishers

As we noted earlier in the discussion of the costs of producing online books, experience with developing a publication process that fully recognizes online books is scant. It is impossible to say what changes in the cost profiles publishers will experience if they move into a world of producing print-on-paper and online books.⁶⁴ In the best of worlds, costs will be reduced and sales will be increased, with a net result of meaningful increases

⁶³ This envisions a model where anyone could search and browse a book online at no cost, but that the ability to read at length, print, and the like would be restricted to those for whom a fee has been paid, e.g., pay per view, library purchase of general access, etc. The potential options are endless.

⁶⁴ Roy Heinz at the University of Pennsylvania reports that Oxford University Press is taking steps to make the formatting and font use in its books consistent and amenable to translation to the PDF format they are using to put the books online. This is the type of retooling of the book design process that every publisher interested in putting books online will need to do.

in the profitability of scholarly publishing. However, it will be several years before the production process and the market for scholarly online books evolve sufficiently so that the final result will be known.

Both MIT Press and National Academy Press have reported increased sales for print copies of books that are available in full text on their Web sites. Columbia University Press reports that sales of the books that are included in CIAO are running at normal levels. Scholars with whom we have talked about online books noted that the online book would be a great advertisement for the print book. The scholars would use it much as they use a bookstore – to browse books to determine if they are of sufficient value to their work to warrant purchase. Attaching a purchasing option for print copies to the site of the online books would provide value to everyone in the chain of production and use of books from author to scholar-user.

Scholarly publishers might jointly or individually experiment with reductions in publishing costs for the books with the least potential demand by moving to a print-on-demand system thus skipping costs of set-up, warehousing, shipping, and the like. They might also examine their whole business and production process to see if other costs might be reduced or eliminated for many low demand titles, e.g., journal advertising, some editorial effort, color jackets or paperback covers.

Expanded exposure of scholarly books via the online pipeline could lead to (1) greater library and scholar sales of whole books and (2) instructors choosing to include book segments in course packs, resulting in secondary income. The price elasticity of demand for books in print or online format is unknown.⁶⁵ Publishers and vendors will need to undertake substantial experimentation with pricing to see what will yield the greatest profitability given the evolving cost profiles for print and online publishing.

Market Responses to Online Books

The scholarly book marketplace involves both individual and library buyers. Research libraries are virtually the only buyers of many of the most esoteric books. Few scholars and few of the smaller libraries purchase these books. Sale of 1,000 copies would be high for this class of book. Scholarly publishers report that many sell only 300 to 500 copies. An intermediate class of scholarly book attracts interest from a larger set of college, university and public libraries as well as individual scholars. The best sellers in the scholarly book class are those that attract some interest from the intellectually interested public and are adopted by instructors for use in some classes. Such a book could sell from several thousand to tens of thousands of copies.

Given this market profile, the opinions of librarians about online scholarly books are critical to their potential success. It is unlikely that many individuals, whether scholars or

⁶⁵ Oxford University Press reported that its experiments with simultaneous issuing of books in both hard cover and paperback found greater profitability from the traditional delayed offering of the paperback format. Too many libraries chose the cheaper format, thus diminishing profits.

members of the educated public, will purchase the online versions of such works as they do not now purchase many of the print copies of such books. Of course, if the pricing profile for online books was radically different from that for print books, this situation might change.

In June 1998, at the annual American Library Association convention, we conducted two discussion groups with college and university librarians in an effort to learn about their reactions to the concept of online books. We met with college librarians in one session, and with collections development librarians from ARL libraries in another session. The college librarians group consisted of librarians from seven Oberlin Group colleges; six were the heads of their libraries. The ARL group included 14 collection development and electronic services librarians. The first group was recruited via individual email invitations. The second group was recruited via an invitation broadcast to a collections listserv. The same basic guide was used for these two discussions, but as the first session was less than an hour and the second about 100 minutes, it was modified to reflect this difference. In addition to the discussion, librarians provided background information on their collecting of electronic resources and opinions of such resources in their answers to a preliminary questionnaire that was distributed via email. The overview to the report on these discussions is given below.⁶⁶

In June 1999 the project was represented in an ALA preconference *Bringing Monographs into the Digital Library* as well as on another panel discussion on electronic resources. The comments and discussions at those sessions are also reflected in the following summary of librarians' reactions to the concept of online books.

Highlights of the wide-ranging survey responses and discussions with the librarian groups include the following points.

- College and university library collections included from a few to many online and CD-ROM full text reference works. Librarians found that their scholars, particularly the undergraduate students, would use electronic reference works almost to the exclusion of print volumes, even if the latter were superior in content. They worried that the students exhibited little judgment of quality in their use of resources found online and that scholars using online resources from outside the library tended not to consult with librarians on which were the best resources for the current task. Some felt compelled to buy online reference works, even if they judged them to be inferior to print works, because that was what their scholars wanted to use.
- College and university libraries possessed few online monographs and historical texts (such as literature and philosophical treatises). Most that they did have were in collections produced by major compilers such as Chadwyck-Healey. A few libraries provided links to various free online collections that were available on

⁶⁶ The full report of these discussions can be found at:
<http://www.columbia.edu/cu/libraries/digital/olbdocs/ALA98FOC.html>

the Web.

- Librarians considered works in which a scholar was using a small segment, e.g., reference works, journals, edited collections of essays, as most promising for the online format. The scholar could review them online most easily and print them out if necessary for reading or filing. Librarians also felt that works that were updated frequently, e.g., directories and books in rapidly changing fields, and works that were not now available in most libraries in print form, e.g., historical and current Asian studies materials, would be valuable online.
- Some librarians believed that if deep collections of monographs in a field were available online fully cataloged, with easy access and searching tools, scholars might begin to use them in ways that we cannot now envision. Students, particularly undergraduates, might gain the greatest benefit from such collections, as they have less skill at seeking out works that are not in the catalog or on the library shelf.
- Librarians were greatly concerned about the systems that would be offered for cataloging, storing, preserving, and migrating online materials. In addition, they worried about the terms of ownership or subscription that publishers and intermediaries might try to inflict on the library community. On the other hand, they were fairly confident that library consortia would develop substantial strength in bargaining with publishers about online materials.
- Librarians worried that publishers have a policy of using the most current design tools to create online materials rather than trying to make them transparent to novices and viable for scholars who have older computing systems and slower Internet connections. (Many faculty members and students working at home would fall into one or both of these categories.) They felt that publishers also seek uniqueness, again often at the expense of user ease. Librarians wanted graphics to be reduced (as they slow down the process of using the resource while adding little value) and search engines to be enhanced. On the other hand, they felt that online books would be most valuable if they had elements that are not available in the print format, e.g., multimedia elements, pronunciation guides, and linkages to other Web-based books, journals, and reference works.
- Librarians felt that publishers and intermediaries should provide stable Web addresses for online books that do not require scholars to go through a series of pages at the providers' Web sites. They sought comprehensive cataloging of online books by the publishers or intermediaries. They also sought a comprehensive set of Web-based statistics on usage of those books by scholars in their communities.

CONCLUSIONS

As we move into the new millennium, electronic books remain a very new, little-explored concept in every market segment. But they are being explored in every industry sector from hardware to software. The Rocketbook and Softbook are examples of the hardware

designed strictly for reading books that has come to market in the last year. The former is aimed primarily at the consumer market while the latter has targeted the corporate market with leisure use secondary. Both are interested in the education market and are exploring its potential. Electronic paper is a concept that continues to be explored as another means of bringing electronic texts to the reading population.

Electronic books are available on CD-ROM in segments from picture books to romances to textbooks. Several thousand important out-of-copyright titles are available widely online and on CD-ROM due to the efforts of volunteers (Project Gutenberg) and some small packagers. Some contemporary titles are also available for reading on devices like the Rocketbook and Softbook. In October 1999, the Encyclopedia Britannica became available online for free, with advertising support, to overwhelming demand. It will still be available as a subscription product to libraries and individuals who chose an advertising-free environment. Compilers like Chadwyck-Healey are offering online texts. Some scholarly publishers are offering online books as part of multi-facet, subject-centered products like CIAO. And in spring 1999, netLibrary launched with as an intermediary between publishers and consumers with the goal of selling individual online books to libraries and individuals in a traditional library circulation model. Both libraries and publishers are participating but largely in a testing-the-waters manner to date. Few scholarly publishers have launched programs to sell individual online books directly to libraries.

Over the past five years we have learned that this innovative concept has substantial potential advantages for everyone in the chain of distribution of knowledge from the author to the ultimate reader. However, it also has drawbacks that must be overcome by technical and market innovation if online books are to be successful in any market segment beyond reference books. They include:

- The determination of optimal design for various types of electronic books, including ergonomic, graphical design, and intellectual issues. The best design may mean substantially higher costs than the next-best alternative. These trade-offs must be measured and assessed.
- The design of devices that will optimize reading online – with good screens, light weight, tools for easily moving around in and marking-up and annotating books at a reasonable price. Some scholars will want single purpose devices at a low price; others will want multi-purpose devices at a somewhat higher price.
- Pricing and terms of use of books offered to libraries and individuals that are viable for both publishers and scholars.
- Security systems for providing books that will assure that only those scholars who are contractually allowed to use these books will in fact have access to them.
- Systems to ensure that only reasonable amounts of a book can be printed, downloaded, or sent on via email without prior approval. For the most esoteric scholarly monographs this provision may have little real value as few copies would be sold under the current model and, hence, there is little likelihood of lost

sales from copying. However, for books that would have been sold more widely to libraries and to scholars, especially for use in courses, this is a serious concern. Authors and publishers are rightfully concerned that sales of their books might be substantially compromised without such safeguards.

The market for online books in the scholarly world will evolve over time. Publishers, libraries, and individual scholars must experiment with the various potential modes of providing and pricing such books in order to determine what works best overall.

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APPENDIX I. HOME COMPUTERS: MINIMUM SPECIFICATIONS RECOMMENDED

Specification	5/94 (for student)	12/94	4/95	8/95	11/95
CPU	486	486/66	486DX2/66	75 Mhz Pentium	75 Mhz Pentium (slowest Pentium available)
RAM	4 MB	8 MB	8 MB	8 MB	8 MB
Hard Drive Capacity	100 MB	340 MB	500 MB	750 MB	1 GB
CD-ROM Drive	Not given	Double	Double	Quad	Quad
Monitor: Size	Not given	Not given	15"	17" better	15"
Capacity	SVGA-compatible	Not given	256-color SVGA		72-Hz
Graphics: Pixels	SVGA	Not given	640 x 480	65,000	640 x 480
Colors			256	1 MB	256
Video RAM					1 MB
Sound: Card	Not given	Not given	16-bit Sound Blaster-compatible	Sound Blaster comp. Stereo	16-bit SB-compatible Powered
Speakers					
Modem	Not given	Not given	14.4 kbps fax modem	14.4 kbps	14.4 kbps fax modem
Price	\$1,500	\$2,500	\$1,800-\$2,000	Not Given	About \$2,000
Source	Family PC , 5/1/94, p. 140+	PC Magazine	"Family Shopper Smartcard," Family PC , 4/95	Walter S. Mossberg, <i>Personal Technology</i> , Wall Street Journal , 8/31/95, p. B1	"Multimedia Family PCs: New Minimum System Requirements," Family PC , 11/17/95

Specification	4/96	4/96	5/96	11/96	4/97
CPU	75 Mhz Pentium	133 Mhz Pentium	120 Mhz Pentium	133 Mhz Pentium (200 Mhz is fastest available)	166 Mhz MMX Pentium (200 Mhz if possible)
RAM	8 MB	16 MB	16 MB	16MB EDO RAM	16MB (32 preferable)
Hard Drive Capacity	1 GB	Fast 1.2 GB	1.2 GB	1.2 GB	2.0 GB, more if possible
CD-ROM Drive	Quad	Quad	Quad	6X (up to 12X available)	8X
Monitor: Size	15" 72-Hz	15" (17" better)	17"	15"	17" with maximum .28 mm dot pitch
Graphics: Pixels Colors Video RAM	640 x 480 256 1 MB	64 bit Graphics Accelerator	65,000 1 MB	Accelerated PCI graphics card w/1 MB RAM	Not given Not given 2 MB VRAM
Sound: Card Speakers	16-bit SB-compatible Powered	Not mentioned	16-bit SB-compatible	16-bit FM music synthesis, SB-compatible	Not given
Modem	14.4 kbps fax modem	28.8 kbps data/fax modem	28.8 kbps	28.8 kbps	33.5 kbps, upgrade to 56 kbps
Connectors					Pair USB ports
Price	About \$2,000	\$2,500 or more	\$2,000-\$2,500	\$2,000	Not given
Source	<i>Family Shopper Smartcard, Family PC</i> , April 1996	Bill Howard, "At Home," <i>Minimums for Perfect Home Computer</i> , <i>PC Magazine</i> , 4/23/96, p. 300	Walter S. Mossberg, <i>Personal Technology, Wall Street Journal</i> , 5/10/96, p. B1	"The '97 Multimedia Family PC," <i>Family PC</i> , Dec. 1996, p. 68.	Walter S. Mossberg, <i>Personal Technology, Wall Street Journal</i> , 4/9/97, p. B1

Specification	8/97 (recommended for students)	4/98	12/98	4/99	10/99
CPU	200 Mhz Pentium MMX	233 Mhz	350 Mhz Pentium II or 300 Mhz AMD K6-2 w/PC-100 data bus	300 Mhz	Over 350 MHz
RAM	32 MB	32 MB or more	64 MB	64 MB	64 MB
Hard Drive Capacity	2 GB or more	3 - 4 GB	6 GB	6 GB	6 GB
Cache	512 KB	512 KB	Not given	512 KB (128 KB w/Celeron)	L2 Cache
CD-ROM Drive	8X	8X	DVD drive preferable	Type not specified	Or DVD
Monitor:	17" with maximum .28 mm dot pitch	17" with dot pitch less than .28mm	Biggest can afford	17"	17"
Graphics: Pixels	not given	Not given	Not given	Not given	Not given
Colors	Not given	Not given	Not given	Not given	Not given
Video RAM	2 MB VRAM	2 MB VRAM	Not given	4 MB	4 MB
Sound: Card	Not given	Not given	Not given	Not given	Not given
Speakers	Not given	Not given	'Good set'	Not given	Not given
Modem	56 kbps	56 kbps	V. 90	56 kbps	Ethernet if plan to use cable modem
Connectors	Pair USB ports	One or more USB ports	Not given	2 USB ports	2 USB
Price	About \$2,000	Max. \$1,500	Not given	About \$1,300	Not given
Source	Walter S. Mossberg, <i>Personal Technology, Wall Street Journal</i> , 8/14/97, p. B1	Walter S. Mossberg, <i>Personal Technology, Wall Street Journal</i> , 4/23/98, p. B1	Peter H. Lewis, <i>How to Kick the Tires When Buying a Computer</i> , <i>New York Times</i> , 12/3/98, online	Walter S. Mossberg, <i>Personal Technology, Wall Street Journal</i> , 4/15/99, p. B1	Walter S. Mossberg, <i>Personal Technology, Wall Street Journal</i> , 10/14/99, p. B1

APPENDIX 2. GATEWAY HOME COMPUTERS: SYSTEM SPECIFICATIONS, 1994 - 1999

Specification	12/94	4/95	5/95	12/95	4/96
Computer Name	P5-60 Family PC (featured in ads)	P5-60 Family PC (featured in ads)	P5-75 Family PC (featured in ads)	P5-100 Family PC (Top Rated, Best Buy)	P5-150
CPU	60 Mhz Pentium	60 Mhz Pentium	75 Mhz Pentium	100 Mhz Pentium	150 Mhz Pentium
RAM	8 MB	8 MB	8 MB	8 MB	16 MB
Hard Drive Capacity	540 MB	540 MB	730 MB	1 GB	1.6 GB
CD-ROM Drive	2x	4x	4x	4x	6x
Monitor: Size	14"	15"	17"	15"	17"
Graphics: Pixels					
Colors					
Video RAM	1 MB	1 MB	2 MB	2 MB	2 MB
Sound: Card	16-bit SB-compatible	16-bit SB-compatible	16-bit SB-compatible	16-bit SB-compatible	16-bit SB-compatible
Speakers	Altec Lansing	Altec Lansing	Altec Lansing	Altec Lansing ACS-40	Altec Lansing
Modem	14.4 kbps fax modem	14.4 kbps fax modem	14.4 kbps fax modem	28.8 kbps fax modem	28.8 kbps fax modem
Software Included	MS Works + CD- ROMS	MS Works + CD- ROMS	MS Works + CD- ROMS	MS Works, 20 CD-ROMs	MS Office 95
Price	\$2,099 + shipping	\$2,099 + shipping	\$2,499 + shipping	\$2,149 + shipping	\$2,899 + shipping
Source	GW2000 ad	GW2000 ad	GW2000 ad	"Multimedia Family PCs: Recommended Systems," Family PC , 11/17/95 & "The Tale of Mt. Bovine," GW2000 advertising insert, 12/95	GW2000 ad

Specification	5/96	5/96	10/96	10/96	5/97
Computer Name	P5-133 Family PC	P5-120 Family PC	P5-166 Family PC (featured in ads)	G6-180 Family PC (featured in ads)	G5-166M
CPU	133 Mhz Pentium	120 Mhz Pentium	166 Mhz Pentium	180 Mhz Pentium Pro	166 Mhz MMX Pentium
RAM	16 MB	16 MB	16 MB/256K Cache	32 MB/256K Internal Cache	16 MB/256K Internal Cache
Hard Drive Capacity	1.62 GB	850 MB	2 GB	2 GB	1.6 GB
CD-ROM Drive	8x	8x	8x	8x	12X
Monitor: Size	17" Vivitron	15" CrystalScan	17" CrystalScan	17" Vivitron	CrystalScan 500 (13.9" viewable)
Graphics	64 Bit PCI Graphics Accelerator w/ MPEG Video Scaler 2 MB	64 Bit PCI Graphics Accelerator w/ MPEG Video Scaler 1 MB	64 Bit PCI Graphics 2 MB	64 Bit PCI Graphics 2 MB	64 Bit PCI Graphics 3-D 2 MB
Video RAM					
Sound: Card	16-bit SB-compatible Altec ACS-40	16-bit SB-compatible Altec ACS-40	16-bit Gateway Sound Altec ACS-40	16-bit Ensoniq Waveable Altec ACS-40	16-bit Gateway Sound Altec ACS-41
Speakers					
Modem	28.8 kbps fax modem	28.8 kbps fax modem	36.3 kbps fax modem w/speakerphone	36.3 kbps fax modem w/speakerphone	Telepath fax modem, x2 Tech upgradeable
Software Included	MS Works + 14 CD-ROMs	MS Works + 14 CD-ROMs	Generations II	Generations II	MS Office 97, Encarta, MMX Tech-Enhanced Software
Price	\$2,549 + shipping	\$1,999 + shipping	\$2,199 + shipping	\$2,649 + shipping	\$1,799 + shipping
Source	GW2000 ad, 5/96	GW2000 ad, 5/96	GW2000 ad, 10/96	GW2000 ad, 10/96	GW2000 ad, 5/96

Specification	8/8/1997	8/8/1997	8/8/1997	1/98 Ads	3/11/98 Web
Computer Name	G5-166w/MMX	G6-266XL (top)	G5-200	G6-233 Best Buy	G6-266
CPU	Intel 166MHz Pentium w/MMX	Intel 266MHz Pentium II w/MMX	Intel 200MHz Pentium w/MMX	Intel 233MHz Pentium II	Intel 266mhz Pentium II
RAM	16 MB	64 MB	32 MB	32 MB	32 MB
Hard Drive Capacity	2.0 GB	9 GB SCSI drive	2.0 GB	4 GB	6.4 GB
Cache	512 KB	512 KB	512 KB	512 KB	512 KB
CD-ROM Drive	12X	DVD-ROM drive	12X	13X min/32X max	13X min/32X max
Monitor: Size	EV500 color monitor (15")	EV900 color monitor (19")	CrystalScan 700 color monitor (17")	EV700 (17") color monitor	EV700 (17") color monitor
Graphics	64 Bit PCI Graphics 3-D	64 Bit PCI Graphics 3-D	64 Bit PCI Graphics 3-D	nVidia AGP Graphics 3-D	nVidia AGP Graphics 3-D
Video RAM	2 MB	4 MB	2 MB	4 MB	4 MB
Sound: Card	Ensoniq wavetable	Ensoniq Wavetable	Ensoniq wavetable	Ensoniq Wavetable	Ensoniq Wavetable
Speakers	Altec ACS-41	Boston AcousticsHi-Fi	Altec ACS-41	Altec ACS-41	Boston Acoustic MicroMedia
Modem	56 KB	56 KB w/speakerphone	56 KB w/speakerphone	TelePath x2 for Windows	TelePath x2 for Win. w/speakerphone
Software Included	MS Office for Small Business, MMX Technology Bundle	MS Office for Small Business, MMX Technology Bundle	Generations III	Microsoft Choice	Microsoft Home Ess. & games
Price	\$1,547 + shipping	\$4,549 + shipping	\$1,879 + shipping	\$1,999 + shipping	\$1,999 + shipping
Source	GW2K Web site	GW2K Web site	GW2K Web site	Family PC ad	GW2K Web site

Specification	4/23/98 Web	12/98 Mag. Ads	4/15/99 Web	6/4/99 Web
Computer Name	G6-300	G6-450	Gateway Performance 450	Gateway Performance 500
CPU	Intel 300 MHz Pentium II	Intel 450 MHz Pentium II	Intel 450 MHz Pentium III	Intel 500 Mhz Pentium III
RAM	32 MB	64 MB 100 MHz SDRAM	64 MB 100 MHz SDRAM	128 MB 100 Mhz SDRAM
Hard Drive Capacity	4 GB	10 GB	13.5 GB	13.5 GB
Cache	512 KB	512 KB	512 KB	512 KB
CD-ROM Drive	DVD II ROM	DVD ROM	4.8X DVD ROM	6X DVD ROM
Monitor: Size	EV700 (17") color monitor	EV700 (17") color monitor	EV 700 (17") color monitor	EV 700 (17") color monitor
Graphics	3D STB Mpack Graphics	AGP Graphics	3dfx Voodoo Banshee AGB Graphics Accelerator	nVidia RIVA TNT AGP
Video RAM	2.4 MB	16 MB	16 MB	16MB
Sound: Card	Ensoniq Wavetable	SB AudioPCI 64D	Integrated SB AudioPCI 64D	Integrated SB AudioPCI 64D
Speakers	Boston Acoustics MicroMedia	Boston Acoustics BA635	Boston Acoustics BA635	Boston Acoustics BA735
Modem	TelePath x2 for Windows w/speakerphone	US Robotics 56K Voice Winmodem	US Robotics 56K PCI Voice Winmodem	US Robotics 56K PCI Voice Ready Winmodem
Software Included	Microsoft Home Essentials.	MS Home Essentials	MS Works Suite 99	MS Works Suite 99
Price	\$1,999 + shipping	\$1,999 + shipping	\$1,999 + shipping	\$1,999 + shipping
Source	GW2K Web site	Family PC , 12/98	Gateway Web Site	Gateway Web Site
Specification	9/1/99 Web			
Computer Name	Gateway Performance 550			
CPU	Intel 550 MHz Pentium III			
RAM	128 MB			

Hard Drive Capacity	20.4 GB
Cache	512 KB
CD-ROM Drive	6X DVD ROM
Monitor: Size	EV910 (19") color monitor
Graphics	3dfx Voodoo3 300G Graphics Accelerator
Video RAM	16 MB
Sound: Card	SB Live! Value w/ Digital Audio Output
Speakers	Boston Acoustics BA735
Modem	3COM USRobotics 56K PCI Voice Ready Winmodem
Software Included	Microsoft Works Suite 99
Price	\$1,999 + shipping
Source	Gateway Web site