How E-books Are Used

A Literature Review of the E-book Studies Conducted from 2006 to 2011

This literature review synthesizes the findings of some two dozen studies of e-book usage by members of academic communities. The studies included in the review were conducted between 2006 and 2011 mostly at colleges and universities in the Anglophone world. The studies yielded different results as to the issue of awareness of e-books among members of the academic community, but otherwise the rate of agreement between the studies was high. Most of them found that academic users typically search e-books for discrete bits of information, a behavior summed up by the formula "use rather than read." They also show that such use of e-books is typical across disciplines, but that members of the humanities and social-sciences were on the whole less satisfied with e-books than their counterparts in the hard-sciences and business. The two main advantages of e-books cited by library patrons surveyed by the studies were searchability and around-the-clock availability. The most frequently cited disadvantages were difficulty of navigation and loss of ability to perform customary research practices such as perusing and shelf-browsing because of e-books' lack of physicality. The latter part of the review develops some implications of the "use rather than read" formula and considers the impact the widespread adoption of handheld e-readers would have on academic libraries. In its concluding section, the review presents the studies' chief recommendations for academic libraries with regard to e-books, and offers suggestions for further investigation into their use by members of the academic community.

Of all the changes the digital age has brought and will continue to bring to libraries, e-books have the potential to be the most drastic. The e-book is not just another way of conveying content that might otherwise be presented in physical form; the translation of the text of a book into digital format can be expected to alter, in subtle ways that we are only beginning to understand, one's fundamental experience of that content. As for libraries themselves, it is already clear that books that do not exist physically obviate the need for the performance of the basic functions for which libraries came into being in the first place: the gathering, harboring, and displaying of physical volumes. Thus, while libraries have accommodated themselves to such changes in their traditional profile as the disappearance of physical journals into the digital realm and the shrinking of once-imposing reference collections, the possibility of a sweeping e-book revolution that has been predicted for over a decade presents a basic challenge to the library's

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very identity. Understandably, academic librarians have been keen to get a handle on this phenomenon with the potential to remake the library so fundamentally, even though it has not been until recently that e-books have made more than halting inroads into most collections. From the early days of e-books, librarians have published studies of how patrons in academic settings relate to this now format, sporadically at first but now in sufficient numbers to warrant a synthesis.[1] The purpose of this literature review is to provide an up-to-date and comprehensive review of those studies. Most of them, even the most recent, do not—and indeed cannot—take into account the ways in which those practices and attitudes may continue to evolve if handheld reading devices or tablets become a standard device for most users. Nevertheless they provide valuable insight into how academics at all levels are currently responding to the e-books provided by EBrary, Netlibrary, Springer, Ebook Library, and the other sources for the online e-books held by most academic libraries.

More than two dozen studies have been published in the last decade that probe patrons' attitudes and behaviors with respect to e-books. This survey concentrates on usage studies done since 2006, as these are more likely to reflect the current experience of users in academic libraries. Most of the studies cover the academic populations at single institutions in North America or the United Kingdom, although several of them focus solely on either undergraduates or faculty members. While almost all of the studies facilitate comparisons among the usage rates and prevailing attitudes of respondents classed by different academic divisions (i.e., humanities, social-sciences, and sciences), a few studies target specific disciplines or combinations of disciplines. In a series of articles published between 2007 and 2009, the team of Jamali, Nicholas, and Rowlands reported on the large national study conducted by the Joint Information Systems Committee (JISC) in the United Kingdom.[2] Because the studies in question primarily seek to understand users' attitudes about e-books, they are mostly qualitative, employing focus groups, interviews, Q-methodology and, in one instance, a combination of direct observation, "think-aloud protocol," and a follow-up interview.[3] Another team, Shrimplin et al., took a unique approach, classifying participants in their survey not by academic status or discipline, but by temperament as book lovers, technophiles, pragmatists, and printers.[4] Taken together, the growing corpus of studies provides a detailed picture of how the patrons of academic libraries employ e-books in their study and research. The exposition that follows will describe this picture closely, referring along the way to particular studies in order to illustrate the points in question.

AWARENESS AND DISCOVERABILITY OF E-BOOKS

Preliminary to questions of whether and how e-books are used is the matter of whether members of the academic community are aware of their availability. The figures for awareness presented by the studies show a wider range than any other topic they address, from a low of 31 percent at University College London to a high of 75 percent at Mount St. Joseph College in Cincinnati.[5] Surveys conducted at the University of Illinois and at the University of Denver yielded figures more in the middle range: 55 percent and 59 percent respectively.[6] The wide variation among these figures suggests that awareness is largely dependent on local circumstances, most prominently but not exclusively such as the degree to which e-books have been promoted at a given institution. Only the study conducted by Levine-Clark breaks this general figure for e-book awareness down into subcategories: one of his significant findings is that a notably higher percentage (74 percent) of humanists were aware of e-books than members of the academic population as a whole, a result that he plausibly explains by noting that humanists rely on the library catalog as a discovery tool more than researchers in the sciences.[7] One may safely propose that as e-books become a more regular feature of academic libraries' offerings awareness of them will correspondingly increase.

Interestingly, two studies (Shelburne and Levine-Clark) reported the highest level of awareness among undergraduates, as opposed to graduate students and faculty.[8] However, Levine-Clark also found that "a small but significant portion" of the respondents were not sure exactly what an e-book was, a finding that was corroborated by the studies done by Hernon, Nicholas, and Shelburne, even though they did not explicitly pose the question of awareness.[9] Levine-Clark comments that "in several open-ended questions, responses made clear that some respondents confused e-books with e-journals or e-reserves."[10] Since students in the earlier stages of an academic career tend to be less aware than their more advanced peers of distinctions between the different kinds of electronic sources (book, journal, website) funneled through the computer, it may well be that the undergraduates' high degree of awareness of e-books registered by these two studies is in part a product of this confusion. Hernon found that students typically did not distinguish among types of sources, but "only focused on the fact that a source was available in print or digitally."[11] Besides making the question of awareness difficult to measure with accuracy, this lack of knowledge has implications for the quality of the users' engagement with the contents of e-books, as will be discussed below.

Closely related to the issue of awareness is the problem of discoverability. Aggregate collections of e-books can simply be missed if individual item records for separate volumes are not included in the library catalog. The data presented by Levine-Clark may be taken as typical. It shows that the library catalog was by a wide margin the primary place where every category of respondent in his survey, except for business students, came upon e-books (the remaining responses to the survey were distributed among "librarian told me," "professor told me," "friend told me").[12] In the case of respondents from the humanities or social sciences, well over 50 percent learned of e-books either from the library catalog or homepage. Even in the sciences, the library catalog slightly edged

out "professor told me" as the most likely source of researchers' knowledge of the availability of e-books in their field and, if the figure (15.3 percent) for library homepage is added to this, nearly half of the respondents learned about e-books by means of library search tools in a broader sense. Rowlands et al. took the further step of querying participants as to how they would prefer to be made aware of e-books: a very slight preference for catalog entries was registered, but user guides by e-mail, user guides on library website, e-mail alerts, and reading lists were other options that received substantial support.[13] These findings suggest that the invisibility of e-books necessitates, at least until they are more familiar features of the information environment, not only that they be included in the catalog with separate records for each item, but also that they be actively promoted by librarians.[14]

USAGE RATES

The rates of usage detected by the studies varied rather widely, from a low of 39 percent of the academic population at Mount St. Joseph College in Cincinnati (the same institution that logged the highest rate of awareness) up to 57 percent at the University of Illinois (Shelburne). The one caveat is that, again, many of the studies detected a degree of confusion, especially among undergraduates, as to what constitutes an e-book in the first place. Still, the roughly 50 percent of respondents in the studies taken in the aggregate who believe they have used e-books would seem to be a robust figure, considering that we are still in the relatively early stage of adoption of e-books, and that both their prevalence and users' familiarity with them are likely to continue to grow. In his study conducted at Laurentian University, Lamothe took the next step of tracking e-book usage relative to the size of the e-book holdings at the library. His overall finding is that the raw number of viewings and searches rose as the number of available items increased, although he also notes that the rate of usage was highest in those years when the university was selective in its purchasing. Particularly striking was the relationship Lamothe found to hold between the ratio of viewings per e-reference work to that of viewings per e-monograph; at its peak, the former ratio was over 200 to 1, while the highest level of usage registered for the latter seemed meager by comparison at 1.37 to 1.[15] It is important to keep this striking disparity in mind when evaluating the usage statistics of the other studies that did not distinguish between e-reference works and e-monographs, as the vastly higher rate that Lamothe recorded for the former could skew the overall statistics significantly.

The other major quantitative study, conducted by Sprague and Hunter, does not expressly distinguish between e-reference works and e-monographs (although given that they make minute discriminations among subject areas it is fair to assume that they are referring primarily to the latter category). Overall, they record that about 19 percent of 14,000 e-books in the library's collection had been used at least once and noted that the figure fell to 8 percent for titles that had been accessed twice and 2 percent for titles that had been accessed five times or more—low figures, as the authors recognize. Sprague and Hunter also found that catalogued e-books were used at a slightly higher rate then those that were not catalogued (20 percent vs. 16 percent).[16] On the other hand, it is worth mentioning that Sprague and Hunter calculated that the cost-per-use rate for individually-selected titles was seventeen times higher than for titles purchased as part of an aggregate package.[17]

The upshot is that the studies find e-books are being used at a viable rate, although the figures in the study by Sprague and Hunter raise some doubt, as does the recurrent finding that some portion of users were confused as to what exactly constitutes an e-book. Other factors that obscure our picture of e-book usage are the circumstance that many of the studies do not differentiate between reference works and monographs, which have very different rates of usage, and the circumstance that the respondents in the large-scale surveys were self-selected, which could also be a source of distortion in the results, since it is reasonable to assume that members of the academic community favorably disposed to e-books would be more likely to respond to a survey about them. The response rate for Shelburne's extensive survey of 47,000 students, faculty, and staff at the University of Illinois was "roughly 3%," a figure that does not allow one to be confident that the sentiments of the academic community towards e-books as a whole are represented.[18]

HOW E-BOOKS ARE USED, AND BY WHOM

While it is important to establish that e-books are being used, all of the studies under review went beyond this to address the question of how they were being used. The answer, borne out again and again by the studies under consideration, whatever their differences in method, scope, target population, or institutional type, is that members of the academic community do not read e-books in the full sense of the term. That is, they do not immerse themselves in them for extended periods of time in order to grasp their overall argument and point of view. Instead, they use them as convenient sources from which to extract information for their scholarly endeavors. This behavior was summed up in 2004 by Appleton in an early study of nursing students under the formula "use rather than read."[19] In Levine-Clark's study, 56.5 percent of the respondents who had used e-books "indicated that they typically read a chapter or article within the book, and 36.4 percent stated that they generally read a single entry or a few pages." He concludes, "clearly most users do not immerse themselves in electronic texts."[20] For Gregory, the "results suggest that students use e-books in a manner similar to how they use e-journals."[21] The study by Berg, Hoffman, and Dawson describes readers' treatment of e-books as "searching for discrete pieces of information."[22] Walton concludes, disapprovingly as the context of his discussion makes clear, "e-books are not being read

but are used to find relevant information that will support an argument in a research paper."[23] Among faculty members, too, the same pattern remains: Jackson summarizes, "Faculty members. . . . search for quick information or to find a print version to refer to for extended reading and research," while in their synopsis of previous literature Carlock and Perry describe faculty's usage of e-books as "very task-oriented."[24]

Hernon, whose study was based on close observation of students conducting their research with e-books, pointedly summarizes, "When studying undergraduate use of e-books, a logical issue to address is, 'Were the students really e-book readers?' Except for two literature majors, the answer is no. With few exceptions, the students do not read large blocks of text (e.g. chapters) online. They scan or scroll, looking for relevant passages. Once they find one, they might read the surrounding sentences or paragraphs. Perhaps the relevant question…. is 'How much time do students spend with an e-book?'"[25] Nicholas et al. refer to their earlier research finding that "the virtual scholar adopts a form of information seeking behavior in connection with e-journals which results in very short viewing and visiting times; certainly, in many cases, insufficient to constitute real reading." Elsewhere in his exposition, he names this kind of reading as "dipping," "flicking," and, rather optimistically, "power-browsing."[26] It should be noted that e-books may also be employed, particularly in the book-dependent disciplines, as a convenient way of previewing a book without leaving one's work station. If the e-version seems promising, then one can search out the physical book.

E-books offer a faster way of doing academic research or, to put it more precisely, of performing certain tasks that are part of the research endeavor. The study by Noorhidawati and Gibb also confirms this broad division between the "referring" associated with e-books and "reading" associated, at least in theory, with print books. In the referring category, they make a distinction between "fact-finding" and "finding relevant content," either for a project or essay or for research work in general. Altogether, 75 percent of their respondents used e-books for these purposes, while 21 percent engaged in extended reading of e-books, but only because the e-books in question were either textbooks or recommended readings for a course.[27] So general is people's dislike of doing extended reading on a screen that even 21 percent stands out as an anomaly in need of explanation, which Noorhidawati and Gibb supply by observing that many students resorted to reading e-books at the institution they studied because no equivalent print book was available (in particular it emerged from student comments that they made use of Early English Books Online to read assigned primary texts that were not readily available in print editions).[28]

Thus, as Nicholas et al. put it, "chapters, paragraphs and sentences are now the unit of consumption . . . students . . . prefer bite size chunks of information."[29] This same phenomenon was registered negatively in the findings of other researchers. In Levine-Clark the percentage of respondents who indicated that they "read" e-books was lower than 10 percent in every discipline.[30] In Walton's study, conducted at a small liberal-arts institution, the figure was 2.6 percent; he also found that e-books that did get used were tied in every instance to particular course assignments.[31] Conversely, the percentages of users who stated a preference for print over electronic books when doing extended or leisure reading were correspondingly high—in Noorhidawati and Gibb's study it was 94 percent—but, even when it came to research, participants in the studies mostly favored print, albeit not as decidedly as in the cases of extended or leisure reading.[32] In Gregory and Walton the percentages of students who preferred printed books for study were 66 percent and 59.35 respectively.[33] In Shelburne, users were asked to predict what formats they would be using for research in the future: although more than half of the respondents chose a combination of formats, among those who opted for one or the other, print beat out electronic by more than two to one.[34]

Those studies of e-book usage that limit their scope to specific disciplines offer further insight into the behavior of different subgroups within academia. The results confirm what one would expect based on well-known information-seeking propensities of the different disciplines. It is reasonable to suppose that members of a particular discipline will be amenable to e-books in proportion as the nature of their field inclines them to seek the kind of research the studies tell us e-books are commonly used for: finding discrete morsels of information. Thus Simon, in her study of business students and faculty, for whom current data are more important than books, is able to conclude, "the information-seeking behaviors of business researchers are perfectly aligned with the structure and capabilities of e-books . . . for business researchers, all e-books become reference books, enabling them to locate just the facts."[35] One would expect e-books to serve a similar function of providing ready information and results in the sciences, and this was borne out by the comprehensive quantitative analysis of e-book usage at the University of Idaho by Sprague and Hunter, in which most of the highest use-per-book rates were found in such scientific or technical fields as microbiology, biology, chemistry, computer science, and forestry-fisheries (other fields among the highest rates were mathematics and anthropology).[36] In the survey of chemists, biochemists, and biologists conducted by Zhang and Beckman, "the most important reason to use e-books" cited by users was their round-the-clock availability, while the "top three features influencing opinions about e-books" were the ability to print or save, search full-text, and ease of use.[37] In the study done by Kimball, Ives, and Jackson, a comparison of the usage rates of electronic and print versions of the titles in chemistry, physical sciences, and computer science yielded figures of 3.4 to 1, 17 to 1, and 207 to 1 respectively.[38] In addition, for business, computing, science, and technology, in other words the fields in which the need for current information is most acute, Herlihy and Yi found a particularly strong correlation between the currency of an e-book and its relevance to researchers.[39]

The monograph-dependent humanities and social sciences present a more complicated picture. Many of the studies

found the usage rates among students and researchers in the interpretative disciplines to be among the highest, often right behind fields like business, economics, and computer science in which utility of e-books is most obvious. Comparing e-book usage of titles in the Netlibrary collection at Auburn University Montgomery with the reported usage from eight larger research universities, Bailey found literature and social sciences to rank consistently among the most highly active disciplines.[40] Yet at least in part this seems to reflect the fact that these disciplines are heavily book-dependent, so that their members are simply more likely to be dealing with many more books relative to other disciplines in the first place. When one goes beyond the raw numbers to consider what researchers in these fields actually do with e-books, the picture becomes less clear. In raw numbers, Sprague and Hunter similarly found high rates of e-book usage among students and researchers in literature and the social sciences; yet when they calculate the use-per-title ratio it is, as mentioned above, mostly scientific fields that rank the highest. Levine-Clark, the sole researcher to date to devote a specific study to e-book usage in the humanities, found his subjects to be less avid about e-books than their counterparts in the more fact-oriented disciplines. He, too, found that humanists have used e-books at fairly high rates relative to other disciplines, but also that their use tends to be less frequent and less sustained. He sums up " the fact that humanists tend to read smaller portions of the [e-book] than other groups and do not generally see the ease of searching the text as a benefit, suggest that they prefer print for reading longer passages, especially those the length of the entire book, and only use the electronic version as a backup when the print is not available."[41]

USERS' PERCEPTIONS OF THE ADVANTAGES AND DISADVANTAGES OF E-BOOKS

Participants' responses to the open-ended questionnaires administered by Jamali and Shelburne afford a more detailed view of their attitudes towards e-books. Jamali et al. found that the biggest reason for using e-books, given by over 52 percent of the students and faculty in their survey, was sheer availability.[42] Given the emphasis on the convenience of e-books for doing research mentioned above, it is surprising that searchability rated a distant second, at 13 percent. Other advantages included cost, portability, eco-friendliness, storage, and multiple users, but except for cost, all of these achieved very small percentages, around 5 percent or less. In Shelburne's study, the same advantages of e-books were adduced at similar rates: while she distinguishes between "instant desktop access," cited by 27 percent of respondents as a plus of e-books, and "access from anywhere," cited by 17 percent, these two figures combined yield a figure (44 percent) in line with the finding of Jamali et al.[43] However, in her study, searchability was mentioned by 25 percent of the respondents, a significantly higher rate. In Croft and Davis, while "any-time access" still topped the list of features of e-books users ranked as "very important," searchability came in at a much higher rate than determined by the other studies: 68.6 percent.[44]

Among the ample selection of user comments Shelburne furnishes, a salient cluster of responses had to do with the ability to find and print the relevant sections of edited collections, thus sparing the user the trouble of having to deal with the unwieldy bulk of many books. Apropos of edited volumes, a graduate student explained: "[the advantage of e-books is] immediate access to chapters in edited research volumes. Unlike journal articles, these chapters are rarely available as PDFs from publishers or in databases."[45] Indeed, if the proportions of comments Shelburne provides on this score correlate with the body of comments as a whole, then the ability of e-books to allow printing of targeted sections is more important to the users in her study than searchability. Users expect the same kind of liquidity that they have come largely to enjoy with articles from electronic journals: the ability to download them on whatever device they choose and print as much of them as they want. When they bump into barriers, they are frustrated. In Slater's analysis, restrictions on the copying, printing, or saving of e-books are one of the major reasons they haven't been adopted more readily. He stresses that these impediments are not "inherent or necessary parts of what an e-book is," but "are superimposed onto e-books by most providers to protect their intellectual property from illegal access and abuses that would impair their profitability."[46]

While availability and searchability were two properties frequently cited in the surveys as the primary benefits of e-books, the main drawbacks were the trouble of reading from a screen and the difficulties of navigating and annotating.[47] At the same time, the studies registered users' stark preference for print books not only for extended or leisure reading, but also in general. In the study by Shrimplin et al., every category of user, even the technophiles who were otherwise enthusiastic about e-books, preferred print books for leisure reading, while the chief difference between pragmatists and printers was that the former group were willing to read small portions of text on a screen while the latter tended to print out everything.[48] Despite the general distaste for screen-reading, Levine-Clark found that users in his study more often tend to read portions of e-books from the screen rather than print them out. Curiously, this is the reverse of what we know to be the way people typically treat articles from e-journals; yet, as Levine-Clark conjectures, "perhaps the respondents to this survey read less of an electronic book than they do of an electronic article."[49] In other words, the parcels of e-books they read were usually so small that they did not warrant printing out. If this is true—and given what the studies reveal about how students and researchers use e-books it may well be—this result is further evidence that e-books are regarded mainly as a sort of expedient reference tool. In the same regard, Levine-Clark also made the unexpected discovery that undergraduates were less likely to read pieces of e-books on the screen than graduate students and faculty. Again he offers

a plausible explanation when he maintains that an advanced researcher is better able to gauge just what he needs from a given work than a novice who may have to gather and sift many sources to find material pertinent to his ends.

As for the difficulty of navigating, it was a problem with e-books singled out by the participants in all of the studies that addressed the question of their usability. If e-books make searching for a particular term or string of words virtually instantaneous, navigating among the different sections was perceived to be awkward when compared with maneuvering through a print book, whose solid physical existence allows for an immediately intelligible and handy spatial organization of its components. Moreover, Jamali and Shelburne register another subtle disadvantage of e-books: while availability was cited by a majority of participants in both studies as a major advantage, some users felt that e-books make one unnecessarily dependent on computers and connectivity. As one faculty member observed, e-books "make students over-reliant on computers and reluctant to use the library and do active research."[50] This is a practical problem but also one with philosophical implications that will be taken up towards the end of this essay.

The perceived disadvantages of e-books are the converse of the felt benefits of print, which have come to the fore only now that a competing medium has emerged. Some of the comments in favor of print books, or in disparagement of e-books, addressed seemingly minor routines associated with the traditional research process that are lost or ill-duplicated within the digital milieu. One of these is shelf browsing, which, as one researcher points out, allows one "to accidentally stumble across something on the shelf, which is often more influential than what was originally being looked for."[51] A different participant in the same study contended that "printed books are still better for random access if you know what you are looking for—search facilities [presumably, that is, e-book search functions] are not the same thing. Casual browsing [in print collections] will always be easier."[52] A variation on this point was struck by a faculty member who hypothesized that managed searching of a book made it less likely that a student would make a serendipitous discovery of some portion of content within it.[53] As J.D. Salinger put it long ago, "fishing . . . in libraries . . . is a tricky business, with never a certainty of who's going to catch whom."[54] Indeed, shelf-browsing, an important strategy in the experienced researcher's repertoire for all that it may seem low-tech and peripheral, would seem to be a casualty of the incorporation (which is, at the same time, and from the point of the view of the shelf-browser, a discorporation) of e-books into the library's collections. If some recent books do not show up in the stacks, then a trip there would no longer reliably afford one a decent overview of the state of knowledge in one's field, and in a library wholly converted to e-books, the stacks would very quickly come to represent a fossilized, antediluvian state of knowledge (the flood being the invisible proliferation of e-books).

Another behavior, on the face of it also seemingly incidental, is the ability to consult many volumes at once; as a faculty member elaborated, "[e-books are] good for quick reference, but virtually useless for extended random-access study involving multiple volumes simultaneously."[55] An interesting conjecture with possibly large implications for academic libraries' embrace of e-books was voiced by still another faculty member: "Physical books help with their visual memories as well, it's easier to remember where, just visually how you think, of where I read that piece of information; it was near the front, so it was an introductory idea."[56] Building on earlier research on electronic text design, Berg et al. underscore a related point: "participants essentially used the tangibility of the print book as an information-seeking aid. The physicality of the print book facilitated participants' awareness of where they were within the book and within the text on the page."[57] By contrast, and paradoxically, the intangibility of the e-book makes it a cumbersome milieu in which to find one's way around. This may be an inherent weakness of e-books, since it is hard to imagine how learning search functions and pressing keys to negotiate their "interiors" can ever be made as easy or agreeable as turning the pages of a book.

THE STUDIES' CONCLUSIONS

Several themes recur throughout these studies' conclusions. On the one hand, some researchers made sure to aver that there is not a competition between print and digital books. Consistent with their findings that e-books do not support extended or immersive reading, they state that print books and e-books are not in an either-or competition. Gregory states the two formats are already "coexisting," with each answering to different purposes and learning styles.[58] Walton, who goes farther than any of the other commentators to put into question the value of e-books for academic reading and study, concludes that "e-books have a market niche in academia related to conducting research, but not for reading."[59] Even a writer who might be expected to champion e-books unreservedly, van der Velde, responsible for "eProduct Management and Innovation at Springer," ends his article with a balanced pair of assertions: "Print books are here to stay; eBooks will enhance access to more science and research."[60] He also lets it be known that e-books are helping to drive book sales, which suggests that e-books, functioning as a kind of previewing or sampling service, exist in a kind of symbiotic relation with their print counterparts.

On the other hand, a number of researchers more concerned with the factors that stand in the way of a more general acceptance of e-books within the academic world end with recommendations for improvements. Carlock and Perry stress that "endorsement and use of [e-books] by university faculty is critical," while noting that professors have been particularly reluctant to employ e-books as text-books, despite possible cost savings, "due to a perceived learning curve for their students and believing that the technology is too unreliable."[61]

Jamali et al. sum up with a host of recommendations: "Although students seem to favour e-books for pragmatic reasons such as avoiding going to the library, convenience of use, added features such as searching, and copy and pasting are not thought to be sufficiently student friendly. . . . Printing features need to be improved and there should be systematic plans and programmes organized by librarians for promoting e-books and improving student's information literacy skills in order to get the maximum from e-books."[62] Shelburne states that "e-books have become an important service offering for the Library," but goes on to remark that "libraries also have a responsibility to make certain they are purchasing e-books from providers who offer the appropriate levels of access and usage rights to this content for a large and varied user population."[63] Besides issues of functionality and rights management, there are also problems of discoverability. Hernon et al., noting that "most of the students limit their examination of a library's homepage to selected databases," end with a call for "libraries, publishers, and content aggregators" to be "more responsive to how students gather and use information to complete classroom assignments."[64] In keeping with their analyses, Hernon et al. and Shelburne also advocated that chapters and chapter abstracts from e-books be included in databases.[65] Finally, many of the studies' authors called for e-book providers to adopt a standard metric for reporting data on searches, viewings, and downloads, so that libraries can have a clearer sense of how the resources in which they are investing their funds are being used and to facilitate comparisons among different e-book packages.

COMMENTARY

The studies under question agree that students use but do not read e-books, but almost all of them stop short of considering the deeper meaning of this finding. This may be appropriate because it is not the place of the authors, in their capacities as empirical researchers, to offer opinions about what library patrons do with certain resources; nevertheless, given our expectations and ideals regarding our engagements with books, the formula "use rather than read" can hardly be a neutral description. "Use rather than read" implies that a user who treats a book as a repository of information units is not getting much out of it—that he or she is in effect scanting the intellectual value it was written to provide. Furthermore, because of the central and often cherished role the book has historically played in scholarly life, let alone in our culture more generally, the prospect that it may be replaced by a novel technology that makes cursory and spotty practices easier and more likely cannot but worry anybody who cares about the continuing vitality of that life. "E-books are an exciting and controversial topic for librarians," begins Shelburne's article, without explaining why the latter adjective is apposite.[66] She does not need to. That many of the studies make a point of observing that physical books and e-books are not rivals in academic libraries betrays an anxiety that indeed they are. Thus while the studies confine themselves to ascertaining how students and faculty members make or do not make use of e-books, it is not hard to detect beneath the obligatory neutrality hints of budding reservations when, for example, Hernon pointedly asks, "were students really e-book readers?" or when Levine-Clark declares, "clearly most users do not immerse themselves in electronic texts."[67] Adopting the voice of a vexed undergraduate for the title of her article, "But I Want a Real Book!", Gregory conveys an amused empathy towards the plight of the student reader, but in the course of the article it is the empathy that prevails.

Of all the studies reviewed in this present article, only Walton ventures to spell out the reservations one might have about the growing presence of e-books in academic libraries:

> Thus, e-books are not being read but are being used to find relevant information that will support an argument in a research paper. In this cut and paste environment, critical thinking is lacking. Students are not critically analyzing the material for appropriateness to their arguments, but are quoting a source without contextualizing the author's argument. Students use the search function in e-books to locate 'relevant' terms in the text, but do not read enough of the work to understand the author's arguments. However, they quote the author as though they do understand.[68]

The gist of this indictment is that e-books, by playing into students' perennial quest for the short-cut, foster skimpier research. For the student bent on fulfilling only the letter of an assignment, the computer becomes one big trough of verbiage from which to throw a paper together. This is a matter of concern for Walton, and should be for all academic librarians, because in the realm of thought there are no true shortcuts. One can always redescribe behaviors in terms that give them a positive ring, as when Nicholas dubs the discontinuous way people "read" e-books "power-browsing," but in disciplines in which interpretation is more the focus than information, to treat a book in such a way is clearly to cheat oneself of any deeper engagement with its argument.

Moreover, if one does not know whether the piece of text one has focused on and perhaps cited in one's own work comes from a journal article or a book, let alone a website, then one is almost certainly missing its rhetorical valence, the step in the demonstration it was meant to further. It is not surprising that the studies found signs of such a confusion among students. The dispersion of the book into digital space would seem to entail the dissolution of the idea of the book as a rhetorical unit. It may be that by dematerializing the book and making its wholeness invisible and intangible, the e-book weakens the very boundaries and concept of the book, making it that much easier to think of the book as a mere fount of textual bits. A decade ago Thomas Mann, in an essay addressed in part to "the dangerous inadequacy of the information-science paradigm," eloquently made the case for the superiority of the physical book to online forms

in terms that anticipate this development. Stating that "the book format is by far the best means that the human race has yet devised for communicating to itself knowledge and understanding, as opposed to unintegrated data and information," Mann argues that "if we make only electronic forms available, *we will be undercutting students' ability to understand lengthy works as connected wholes.*"[69] At the time he was writing, e-books themselves did not yet loom as a distinct alternative—the threat was from online sources in general—but in effect what the studies of e-book usage show and what Walton deplores is that the superficial way people relate to online information sources in general carries over to their treatment of e-books. As we proceed further into a digital age we may find that the idea of the book was anchored in its physicality, without which there was nothing to keep it from dissolving into incoherence.

In fairness, one has to ask how often do students in academic settings deeply engage books as they do end-of-the-term combat with term papers and other projects? In other words, perhaps what these studies have uncovered is simply students' standard practice when it comes to books of any sort, so that what appears as a hasty manner of inquiry encouraged by the e-books' online presence and search functions is simply a transposition into the new medium of existing procedures and attitudes. As Anderson contends in a recent editorial on the crisis in research librarianship, "for researchers, much of the value of a printed book lies in its usefulness as a database"; so e-books would simply make it easier for users to do with books what they do anyway. Anderson goes on to write that, "in research libraries we still treat books as though they were tools for linear reading," the implication being that since users do not progress through them linearly but hop around in them in search of specific information relative to their academic purposes, libraries should give them the digital tools that will make that process easier.[70] Slater, too, in his literature review, questions whether the shallow use readers make of e-books is any different from what they do with physical books. He argues that the research on how academics make use of printed sources does not back up the inference "that when people use a print book . . . they are going to read the bulk of the book in a mostly linear fashion."[71] If this is so, then the complaint that e-books tempt students into inferior modes of research would lose much of its force.

One thing we can be sure of is that if they are to carry any weight, generalizations about how e-books are used in academic settings must be backed up by consideration of the research patterns in the different disciplines. The usefulness of a book as a database is limited for humanists and a fair number of social scientists, except for those engaged in the sort of computational research that belongs to the digital humanities. Levine-Clark found that the searchability of e-books is of little value to humanists, though they may take advantage of them for certain specific tasks. To say that the humanities and social sciences are book-dependent is to recognize that what matters in these areas are such things as a comprehension of a book's overall argument, a feel for its development, an assimilation of its perspective and characteristic turns of thought, a critical appreciation of the manner of interpretation it displays in order to arrive at its conclusions. Moreover, if it is undeniable that researchers in some disciplines exploit the capabilities of e-books as an expedient reference tool or database, it is just as undeniable that the many high-quality scholarly books in the humanities published each season by university presses could not have been written by authors whose interaction with other books in their field consisted of nothing more than extracting relevant bits of information. The sort of advantage to be had by searching the text for keywords that may or may not correspond to fundamental concepts and strategies of thought could only play a small part in the hermeneutic labor necessary to produce such a book.

Clearly, inasmuch as librarians en masse adopt the view that digital versions of books are destined to replace physical ones, the phasing out of print books will indeed be inevitable because it will be self-fulfilling. The pressure of this collective belief is the reason why most aficionados of physical books adopt a self-deprecatory, apologetic tone when stating their preferences: "call me old-fashioned but . . ." or "this is just a matter of taste but . . . I just like the feel of the physical book." The study by Shrimplin et al. does not tell us what percentage of its respondents was comprised by bibliophiles, but the salient preference across all of the studies for physical books for extended or immersive reading indicates that print books are preferred for what we typically think of as the kind of reading on which sustained intellectual inquiry depends, let alone the life of the mind. The single biggest factor the studies detected motivating readers' rejection of e-books was described either as eye-strain or, more generally, as a dislike of screen reading. There is a slight, yet meaningful difference between these two descriptions; eye-strain caused by reading from the screen could in principle be remedied by further technological advances, which indeed seem to be inevitable. But it may be that the users' dislike of screen-reading—and here is a possible avenue for further probing of users' attitudes about e-books—points to a deeper antipathy for which no technological fix will ever be forthcoming because the problem is technology itself. That is, it may be that people's distaste for e-books when it comes to in-depth reading ultimately stems from their feeling that enveloping a book in high technology is unnecessary and obtrusive, that the print book, a humble but optimal technology, ideally suited for the purpose of sustained reading, for handy navigation, for personalization, for mnemonic attachment, was always much more than a mass of words, and that to strip it of its physical trappings and reconstitute it as an online text file distinguishable from other text files only by its length, itself a property that can no longer be immediately felt or measured, is to make it a drab and sterile thing.

Gregory seems to touch on such a view when she offers the conjecture that "perhaps the desire for a physical book is a way for students to vary their information intake in such a heavily online, hi-tech culture" and adds the student comment "I'm constantly on a computer already so I like

to do research with different materials."[72] Computers impose a relative featurelessness on the text files one reads or prints from them, whereas print books, because they come in any number of shapes, sizes, and designs that moreover convey subliminal information about the eras and markets that created them, have distinct, interesting physiognomies with which one can form associations that abet one's grasp of their content. This may be the deeper reason for bibliophiles' strong attachment to the objects of their affection—far from being a quaint, aesthetic preference or, as Shrimplin et al. imply, an ideological bias and *ipso facto* dubious—their staunch preference may stem from an intuition that the deeper relationship, sealed by affection, that they can have with a physical book is a vital study aid when compared to the relative uniformity of virtual texts. If this is what bibliophiles implicitly sense, then they are unlikely ever to become willing converts to e-books.

THE CHANGING SCENE

But the technological scene is all in flux. In the last few years handheld reading devices such as the Nook and the Kindle, which have made immersive reading of e-books more appealing, have achieved a certain degree of popularity (although while it sounds impressive that millions of such devices have been sold it should be remembered that that figure still represents a fraction of a population of hundreds of millions). Since the sort of reading that users do on such devices is the very kind that the e-book usage surveys have consistently found people unwilling to do on a computer screen, the spread of these devices has potential to alter people's attitudes about e-books. At this point it is hard to cut through the hype and gauge how popular they may yet become; it doesn't seem likely they will ever be deemed indispensable, but if they continue to catch on with the general public and become more and more regular options at school and public libraries, then members of the academic community will soon expect that their libraries also lend them digital texts on their reading machines. A few of the more recent studies on e-book usage under consideration in this review acknowledge the sea-change for libraries the general adoption of these devices by the public would represent; yet beyond that there is not much they can do since the future is not susceptible to empirical probing. But the path to such a state of affairs is not direct. Not only are such devices owned by a minority of the population, but in all likelihood e-books would have to be made compatible with a gamut of devices, in other words be rendered independent of particular platforms, before they would present libraries with a feasible channel for provisioning materials. As of now, such factors as the growing variety of formats and devices, continually advancing technology, an assortment of digital rights management schemes, and the likelihood of further price reductions, renders it impractical for academic libraries to commit themselves to a particular device or version of a device and begin lending e-books for use on it.

Moreover, a recent report by the American Council of Learned Societies found reading from handheld devices had several disadvantages for academic researchers both vis-à-vis print and online resources. These were the difficulties of annotating, navigating, and printing, and the impossibility of searching across large collections. The study concludes that "at least in the short term . . . a combination of traditional research using online and physical resources and old-school note-taking in a separate document or even on a print-out is likely to remain the favored and more practical approach for most scholars."[73] A couple of figures from a recent survey of library administrators about their own use of handheld devices suggests some of the ambiguities of the present moment. Zimerman found that 24 percent of respondents currently owned an e-reader, and the majority of them (60 percent) used it for entertainment.[74] While, on the one hand, only one out of four owned an e-reader, on the other hand, the main purpose for which they used it was entertainment, not study or research.

FURTHER RESEARCH

Further research is warranted in a number of areas. In general, ongoing investigation into which kinds of e-books are used by which disciplines in which ways is necessary, especially since technological changes, in particular the spread of handheld reading devices, will probably induce users to revise their attitudes and behaviors. It is important that such research distinguish among e-reference works, e-textbooks, and e-books otherwise associated with particular courses, each of which has specific kinds of use associated with it. Among humanists and, to a lesser degree social scientists, primary texts in electronic format, either as individual works connected with particular courses or as collections that make available corpora of writings not easily available in print form, would constitute another set of special cases. But once one has separated out these special cases there remains the large amorphous category of scholarly monographs in electronic form, still the most definitive form of scholarly communication in the humanities and hermeneutically-oriented social sciences. Since the research has clearly shown that no category of user, from the "net-generation" undergraduate whom one might have supposed would be comfortable with reading from the screen on up to professors themselves, spends much time reading e-books in the full sense of the term, it would be valuable to parse the kinds of use to which e-books are put still more minutely: not only do we need to know if patrons primarily use e-books for "fact-finding" and "finding relevant information," to cite the categories used by Noorhidawati, but also the extent to which they are employed as an on-the-spot previewing service which allows researchers to see enough of a book to assess whether it suits their purposes before retrieving a physical copy either from the stacks or through interlibrary loan.

A subsidiary question to be pursued in more detail is just how extensive is the confusion as to the definition of an

e-book. If this confusion is primarily confined to undergraduates, is it a temporary state of ignorance that will inevitably be dispelled as they progress through the academy and come to make distinctions among rhetorical types? Or have the studies unearthed attitudes typical of a new generation, raised in a digital culture in which the pertinence of the concept of the book is lost in the rivers of content sluicing through the computer screen? Above all, more comparative studies of how print and electronic books are used in the monographic-dependent disciplines are needed to understand better the subtle effects e-books may have on users' conceptions of the research process. Such comparisons are often implicit in the existing literature, and surveys consistently reveal the pattern of e-book usage epitomized by the "use rather than read" formula; yet the full meaning of this result can only emerge within the larger context of knowledge about how students and scholars in the interpretative disciplines make use of print monographs in general.

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