Redefining Reading: The Impact of Digital Communication Media

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It’s not a book. It doesn’t have a smell, you don’t touch it ..., you’re plugged into the internet, you can’t concentrate, it hurts your eyes, and you lose the beauty of the words behind this screen. Life itself is in hard copy[.] Not this treacherous digitalism which has permeated our lives and our reality

Each new technology is potentially Janus-faced, improving the human condition or undercutting prior achievements. The steam engine helped launch the Industrial Revolution, but then contributed to exploitation of child labor and squalid urban living conditions. The automobile made possible convenient transport, but also generates pollution and leads to countless highway deaths. Pocket calculators facilitate balancing checkbooks, but have weakened basic arithmetic skills.

The same conundrum holds true for technologies of the written word. The printing press helped spread literacy but shook the foundations of the Catholic Church. Word processing enabled the Japanese to generate text without producing each kanji (Chinese character) stroke by stoke, but now many Japanese find themselves forgetting the stroke order. Spell-check monitors typographical errors, but dampens motivation to master spelling.

Information and communication technologies have generated new platforms on which to read. The list includes desktop and laptop computers, e-readers (such as the
 Kindle or nook), tablet computers (e.g., the iPad), the iPod Touch, and mobile phones. But does reading on these devices differ from reading in hard copy? If so, does our growing dependence upon reading onscreen contribute to a redefinition of what it means to read?

**What Does It Mean to Read?**

Just as the word *text* can have many meanings (*Paradise Lost*? a soup can label? a traffic sign?), so can the word *reading*. First: What kind of reading materials do we have in mind? For our purposes, we will be referring to extended, connected text of the sort familiar in newspapers, novels, or religious works (rather than, e.g., news headlines or tweets).

Next, how do we approach text? Do we read linearly (from start to finish) or do we seek out particular snippets (using a table of contents, an index, or the “Find” function for an online text)? Do we skim or engage in “deep” reading (Wolf and Barzillai)? Do we read quickly or slowly? Answers to these questions are often shaped by the character of the text: Is it familiar to the reader or new material? How complex are the words, the syntax, and the concepts expressed? Functionality is also a consideration in defining reading (e.g., reading for information, for conceptual understanding, for enjoyment, or to kill time), as is the nature of the physical medium (e.g., a scroll, a paperback, an iPhone).

Reading is, of course, just half of the larger notion of literacy. The other part is writing. Historically, ability to read has not always implied ability to write – or vice versa (Baron, *Alphabet to Email* 81-82). However, in modern times, when we speak of people being literate, we generally mean readers who possess at least some writing skills. These skills may be utilized not only in producing original text but also in annotating what others have written or in copying out passages of existing texts.
Writing has commonly accompanied the act of reading. Reader markings appear in all sorts of texts (Jackson; Caxton Club), from marginalia in the Gutenberg Bible to underlining in a literature professor’s well-worn copy of Jane Austen. Written accompaniment to the act of reading can fill various roles. The simplest is to make prominent particular parts of a text (e.g., by underlining or using a highlighter, or by adding asterisks, lines, or squiggles of the reader’s design). More reflective are notes written in the margins or in an external location – a notebook or a computer file. For many contemporary readers, textual annotation remains integral to the reading process.

**User Perspectives on Reading**

A burgeoning literature (e.g., Carr; Cull; Greenfield; Small and Vorgan) is now considering how using the internet may be affecting cognitive activity. Evidence for such effects is being drawn from a variety of sources, including neurological imaging and objective performance on cognitive tasks.

Some studies directly address reading onscreen. Jakob Nielsen has reported that “people rarely read Web pages word by word”. Investigators at University College London, examining how users interact with online research sites, concluded that

users are not reading online in the traditional sense, indeed there are signs that new forms of ‘reading’ are emerging as users ‘power browse’ horizontally through titles, contents pages and abstracts going for quick wins. It almost seems that they go online to avoid reading in the traditional sense. (10)
Ziming Liu’s research indicates that while the graduate students he studied turned first to either library online information resources or the web for help in completing assignments, 80% of his subjects “always” or “frequently” printed out electronic documents (586, 587).

Professional writers such as Nicholson Baker, Alan Jacobs, and David Ulin have weighed in on how reading on digital media compares with reading in hard copy (the general consensus being that current e-readers are somewhat clunky, but may provide a platform for uninterrupted reading of longer texts). However, it is important to hear as well the voices of ordinary readers, especially those of university students – the first generation of “digital natives”. Therefore, in Fall 2010 and Fall 2011, the author investigated users’ perspectives on reading in hard copy versus on digital platforms.

**Print or Onscreen?**

The initial study involved 82 undergraduates (aged 18 to 24) at a mid-sized private university in the US. Using a questionnaire mounted on SurveyMonkey (a commercial online survey instrument), participants were presented a series of questions requesting choice among alternative responses. For example, students were asked how often (“most of the time”, “sometimes”, “occasionally”, “never”) they annotated their textbooks by highlighting, underlining, or making notes in the books themselves. In addition, open-ended questions probed what students liked most (and liked least) about reading onscreen or in hard copy. Finally, subjects were invited to offer any further comments. We look here at the results most relevant to the present discussion.¹

*Ownership, Annotation of Textbooks*
Several questions addressed students’ relationship with their textbooks. We found that

- 61% sold their textbooks at the end of the semester “most of the time”
- 51% were currently renting hard copies of some of their textbooks
- 48% indicated that they annotated their textbooks only “occasionally” or “never”

Given that more than half the students were disposing of their books at the end of the semester, there is a certain logic to not annotating them.

**Preferred Mode for Reading**

Another series of items queried students’ preferred platform for reading different genres (e.g., serious non-fiction, light fiction, newspapers), either for academic purposes or for pleasure. Except for reading academic journals and newspapers, students overwhelmingly preferred to read in hard copy rather than online. (Of relevance is that the university had recently moved its bound journal collection off-site, necessitating reliance on electronic journals.)

**Doing Assigned Reading**

Two questions probed how students approached reading assignments. When asked which platform they preferred if academic reading materials were available online, 55% favored reading the assignment online. However, 39% indicated they usually printed out the material and then read it, while another 6% noted they read the material online and then printed it out. When asked if they were more likely to read an assigned article if it were available online or they were handed a copy, 6% said “available online”, while 56% chose “handed a copy”. (The other 38% declared it made no difference.)
**Cognitive/Usability Issues**

The survey explored students’ level of engagement with reading materials, along with cognitive outcomes. When asked whether they re-read academic materials, 49% said “occasionally” and 10% said “never”. These self-reports are consistent with the earlier finding that 48% only “occasionally” or “never” wrote in their textbooks, in that annotations typically facilitate reviewing a text that has already been read. However, when asked if they were more likely to re-read academic materials available in hard copy or onscreen, 66% selected hard copy, compared with only 24% onscreen. (The other 10% indicated they didn’t re-read.)

Students were next asked to compare their memory for what they read in different media. While 46% indicated the medium didn’t matter, 51% reported they had better memory for material read in hard copy, compared with only 2% onscreen. Even more telling were subjects’ responses regarding multitasking: 90% replied they were likely to multitask when reading onscreen, compared with only 1% when reading in hard copy. (The other 9% said they were equally likely to multitask when reading on both platforms.)

Cognitive and pedagogical issues also surfaced in the open-ended questions about what subjects liked most (and least) about reading in each medium. When asked what they liked least about reading onscreen, 91% complained about something of a cognitive nature (e.g., “I get distracted”; “I don’t absorb as much”). Similarly, when asked what they liked most about reading in hard copy, 78% of the responses involved cognition or usability (e.g., “necessary for focus”; “I can write in it”).
Resource Issues

In their “like most” / “like least” responses, a number of students volunteered sentiments relating either to ecological resources (e.g., what they liked least about reading in hard copy was “kills trees”) or money (e.g., by reading onscreen, you “don’t have to pay to print stuff out”). However, in their comments at the end of the survey, several students acknowledged personal conflicts in choosing between reading platforms, e.g. “I prefer hard copies, but think they’re bad for the environment”; “I know it's a waste of paper, but I really prefer reading a physical book or article to reading it online.”

Physicality of the Book

Finally, 10% of the subjects indicated that what they liked most about reading in hard copy involved the physicality of books. Among their responses were “having a tangible copy of the text” and “tactile interaction with reading material”. The desire for a tangible, tactile relationship with reading material is reflected in the fact that many subjects printed out online materials, either before or after reading them.

Reading on the Run

The second study focused on using mobile devices for reading. Some questions referenced reading in hard copy or on desktop (or laptop) computers for comparison. The study was intended to survey a broad spectrum of users (college-age and up, and from a variety of occupations), though the majority of responses (203 out of 296) were from 18-24 year-olds, 192 of whom were students. (Ten other students were between age 25-35, and 1
between age 36-50, making a total student population of 203.) Using email and Facebook, we recruited subjects to complete a SurveyMonkey questionnaire.\textsuperscript{2}

While many survey questions explored the physical venues in which respondents read on different platforms (e.g., when waiting for a bus, when sitting in a coffee shop), we focus here on responses relating to cognitive issues and emotional/aesthetic/physicality issues.

**Cognitive Issues**

Subjects were asked to compare which of two platforms made it easier to concentrate on reading. Looking at just the 203 students, although relatively few owned some of the mobile devices (tablets: 26 students, or 13% of the student sample; e-readers: 43 students, or 22%), the results show clear trends:

- **hard copy:** 90%
- **tablet computer:** 10%

- **hard copy:** 67%
- **e-reader:** 33%

- **tablet computer:** 68%
- **desktop or laptop computer:** 32%

- **e-reader:** 78%
- **desktop or laptop computer:** 22%
e-reader: 64%
tablet computer: 36%

The perceived advantage of hard copy for concentration (over a tablet or e-reader) is not surprising, given results from the first study indicating preference for reading in hard copy. Students’ perception of greater concentration when reading on a tablet, compared with a desktop or laptop computer, likely reflects the risk of succumbing to easily-accessible online temptations when using traditional networked computers. (Two-thirds of the student tablet owners indicated they purchased the device primarily for reading.) E-readers, which typically lack general-purpose internet connectivity, were seen as posing fewer challenges to concentration than either traditional computers or tablets.

Cognitive issues were also on the minds of subjects in the second study as they responded to the open-ended questions: what they liked most (and least) about reading on mobile devices. Of the 231 subjects (from the larger pool of 296) who responded to the open-ended questions (most, but not all, of whom were students), 10% indicated that what they liked least related to cognitive focus, critical thinking, or retention. For example,

“harder to focus on a computer screen” (18-24 year-old female)

“With my iPad, I can get distracted very easily by my ability to switch back and forth between the internet and the reading.” (18-24 year-old female)

“it is hard to remember where u read things” (18-24 year-old male)

“[when using an iPhone] I…am rushed and multitasking (reading, moving about, interpreting my surroundings), so I don’t think I’m retaining
content/narrative from my reading as well as when I’m better situated” (25-35 year-old male)

With one exception, no one indicated a cognitive advantage to reading onscreen.

**Emotional/Aesthetic/Physicality Issues**

Another 10% of the open-ended responses as to what subjects liked least about reading onscreen related to emotional or aesthetic issues, or to the physicality of books. Some examples:

“You feel disconnected from the work, and they do not smell of rich leather binding” (18-24 year-old male)

“lack of tangibility” (18-24 year-old male)

“I just like the feel of books” (18-24 year-old female)

Similarly, the respondent whose words we quoted at the beginning of this essay (an 18-24 year-old female) complained that a mobile reading device is “not a book” and that since it’s plugged into the internet “you can’t concentrate”.

**The Future of Reading**

Our two studies of user perspectives regarding reading platforms present a nuanced portrait. The first study revealed that while many students are not keeping their books (or doing much annotating), most nonetheless prefer reading in hard copy and perceive such reading to have cognitive advantages over reading onscreen. In the second study, students reported doing substantial reading on digital platforms (particularly computers, iPod Touches, and mobile phones), but judged it easier to concentrate when reading on
platforms that lacked internet connectivity (i.e., hard copy, e-readers). Like the first group, many voiced preference for the physical aspects of books.

This research captures only some of the issues affecting today’s readers. However, by combining findings from the two studies with other discussions of reading, we can begin to identify factors that may be shaping a definition of “reading” in the digital age.

**Factors Contributing to Redefining Reading**

_Cognitive/Pedagogical Issues Deriving from Reading Onscreen_

This is the domain in which we would anticipate finding digital technology affecting what we mean by “reading”. Issues include:

- **Loss of Concentration Due to Distraction** (especially from other functions available through digital devices). The exception here may be e-readers (Jacobs, “The Pleasures of Reading” 81, 82).

- **Exchanging Linear Reading for Searching or Skimming.** In the memorable words of Joe O’Shea, a newly-selected Rhodes scholar,

> I don’t read books per se. I go to Google and I can absorb relevant information quickly. Some of this comes from books. But sitting down and going through a book from cover to cover doesn’t make sense. It’s not a good use of my time as I can get all the information I need faster through the web. (qtd. in Jacobs, “The Pleasures of Reading” 72)

The “Find” function in online reading has created a new culture of what elsewhere I have called “snippet literacy” (Baron, _Always On_ 204-6).
• **SHRINKING EXPECTATIONS ABOUT REASONABLE TEXT LENGTH.** Proliferation of short textual formats (IM, text messages, Twitter, mobile apps for news outlets, and even mobile phone novels – see Goodyear) correlates both with perceptions that we lack the leisure time necessary for doing longer reading (Griswold et al.) and with the growing tendency by university faculty to assign short online readings (chapters, articles) in lieu of entire books.

• **ASSUMPTION THAT “READING” SHOULD INCLUDE INSTANT ACCESS TO OTHER RESOURCES.** Platforms with internet access enable users, in the act of reading, to draw relevant information from other sources. As one subject in the second study reported, what she liked most about reading on a mobile device was being able to “toggle between my book and my foreign language dictionaries easily”.

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*Losing the Physicality of the Book*

A second – and less anticipated – issue regarding the impact of digital technology on what it means to read involves the physicality of the printed book. Readers expressed a variety of concerns, leading us to infer that physicality has been part of their notion of “reading”:

• **EMOTIONAL/AESTHETIC ISSUES.** Subjects in the second study complained that with digital media, “You lose the sense of being inside the book when you read anything but a hard copy”. They also spoke of the tactile and olfactory relationship they had with books (“I like turning pages. It’s satisfying.” and “The disadvantage [of a Kindle or iPhone] is that it doesn’t have the feel and smell of a book.”).

• **NAVIGATION IN A PHYSICAL BOOK.** Several research participants noted enjoying the process of physically navigating in a book. In the second study, one commented that
reading on a mobile device was “not as satisfying as getting a chunk of a book done”,
while another objected that with mobile readers it was not possible to see how far
along in the book you were. A third subject mentioned the importance of seeing the
book’s cover (“[with a Kindle I] don’t remember the book title/author as well
because [I] don’t see as often ... [the] cover of [the] book.”). And a fourth missed
being about to easily flip back and forth in the text to find a particular passage.

- **Reading by Eye and Hand.** Annotation of digital texts is still fairly cumbersome,
  though sure to improve over time. In the meanwhile, many readers commented that
  only physical books permit convenient annotation.

- **The Social Functions of Physical Books.** Printed books (and what we write in them)
can serve as the basis for social interaction. Undoubtedly, networked computing has
enabled us to easily exchange newspaper articles, website URLs, and the like with
one another. But, as one subject commented, you can’t lend ebooks. With digital
materials, you also can’t share in the reading experience of someone who has
annotated a text you come upon in a library or used bookstore, or to whom you have
lent a book in which the borrower has then written. (Samuel Coleridge was
notorious – and often appreciated – for annotating borrowed books.)

- **Physical Jog to Memory.** The act of browsing the shelves of a physical library (one’s
own or in a public space) can prod one’s memory – of books enjoyed in the past, of
forgotten titles that now prove relevant. While one can scan titles in an electronic
file, this is a very different physical (and perhaps cognitive) experience.

**Conclusions**
The meaning of “reading” has not remained static over time. Some changes have involved shifts in individual or social practice, such as the transition from reading aloud to silently (Saenger, *Space between Words*) or from reading to others to more individual reading (Manguel). Yet other changes reflect the emergence of navigational tools, including tables of contents and indexes. Printing encouraged standardization of abbreviations and replacement of hard-to-read cursive hand with more legible print (both of which made for faster reading), along with the proliferation of page numbers, increasingly used for cross-referencing within a text (Saenger, “The Impact of the Early Printed Page”).

Other changes in reading reflected technological developments unrelated to print. In the eighteenth century, increased affordability of windows in middle-class residences made reading physically easier (Watt). Growth of the railroads in the nineteenth century meant reading was a good pastime on train journeys (Altick). The number of readers has also evolved. Literacy rates in the West soared in modern times. So, too, did the amount people read, with the nineteenth-century British triple-decker novel epitomizing the “long read”. However, a chorus of voices (Griswold et al.; Jacobs, “We Can’t Teach Students”; Steiner) is now concluding that long-form reading, or slow, careful reading, or even regular opportunities to read for enjoyment are simply not reasonable expectations for a wide swath of educated people. Rather, it is more appropriate to think in terms of a “self-perpetuating minority that we shall call the reading class” (Griswold et al. 138).

Mass education has led to many people “reading”, but not necessarily to the cognitively-focused, physically-grounded reading with which dedicated readers (including many subjects in the studies cited above) tend to identify. Perhaps, as Alan Jacobs argues, we would best recognize that
the whole environment of school is simply alien to what long-form reading has been for almost all of its history.... Education is and should be primarily about intellectual navigation, about ... skimming well, and reading carefully for information in order to upload content. Slow and patient reading, by contrast, properly belongs to our leisure hours. (Jacobs, “We Can’t Teach Students”)

Given the paucity of leisure, we might anticipate that the number of people engaging in “slow and patient reading” will be small.

In evaluating the impact of digital technologies on what it means to read, we need to be mindful that just as the notion of “reading” is complex, so are the ways in which we must think about reading platforms. Here are three important considerations to keep in mind:

- Beware of mistaking nostalgia for substance. While a number of subjects saw the feel and smell of books as vital to the reading experience, people a century ago may have displayed parallel sentiments about their horses and travel. Moreover, some might argue that 18-24 year-olds are not sufficiently “digitally native”, given their extensive experience with print media, or that the studies did not use random sampling.

- Digital reading technologies are still new. It took more than a decade for e-readers to penetrate the market, partly because earlier technologies were not user-friendly. Given the rapid appearance of new functionalities on mobile media, it is foolhardy to assume that future digital reading platforms cannot overcome some of the shortcomings that current readers identified.
Each information and communication technology has its own affordances, that is, functions for which it is particularly well-suited (Sellen and Harper). Besides praising mobile devices for being lightweight and able to contain dozens of books, our subjects commented on the ease with which they could access materials related to their reading (e.g., dictionaries or relevant web pages), as well as on the fact that non-networked devices such as e-readers facilitated concentrating on just reading.

These issues notwithstanding, the fact remains that digital reading platforms support some functions of reading more than others. Such platforms are highly useful when reading for information and for filling in small gaps of free time. In an earlier cross-cultural study of mobile phone use, I found university students often used their phones to kill time (Baron, “Attitudes towards Mobile Phones”). With the explosive development of apps on iPhones and iPads, killing time by reading snippets on mobile media has become yet more pervasive.

It is less clear that reading on digital platforms is particularly useful in reading for deeper-level understanding. The odds seem stacked against this function, given difficulties in annotation, a tendency not to re-read or remember digital text (compared with hard copy), and the overwhelming likelihood that people reading on digital devices will be multitasking, thereby dividing their attention.

Taken together, these factors point to a notion of reading that structurally privileges locating information over deciphering and analyzing more complex text. This structural bent becomes increasingly important in planning educational curricula, as the number of online courses (along with online readings) skyrockets, and as readers flock to e-books.
because they are less expensive than print counterparts. Given pressures from both pedagogical and economic fronts, the question of which we must not lose sight is whether a new notion of “reading” is emerging in which deep and sustained reading (whether for work or for pleasure) runs a distant second to information-gathering and short-term distraction.

NOTES

1. For more details on the study, see Baron (“Reading in Print”). The author is grateful to Michal Panner for assistance in data analysis.

2. The author is grateful to students in her Fall 2011 University Honors Colloquium for recruiting subjects, and to Assen Assenov and his staff for assisting in data analysis.

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