

kindle

# EBOOKS

## The Ebook

Exploring the book metaphor  
and the unfulfilled potential  
of electronic books

*by*

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“Books are an amazing human invention. They allow instant access to information simply by turning pieces of paper. They are much faster to use than computers. Surprisingly, humans invented books before computers. They do many things backwards.”

Animorphs #8: The Alien by K. A. Applegate

“Besides the Sub-Etha Sens-O-Matic and the scripts he had an Electronic Thumb—a short squat black rod, smooth and matt with a couple of flat switches and dials at one end; he also had a device which looked rather like a largish electronic calculator. This had about a hundred tiny flat press buttons and a screen about four inches square on which any one of a million ‘pages’ could be summoned at a moment’s notice. It looked insanely complicated, and this was one of the reasons why the snug plastic cover it fitted into had the words Don’t Panic printed on it in large friendly letters.”

The Hitchhiker’s Guide to the Galaxy by Douglas Adams

“It was not a box at all. It was a solid thing. The top was printed with golden letters. The left edge was rounded and smooth, made of something that felt warm and soft but strong. The other edges were indented slightly, and they were cream-colored.

Harv could not put up with the wait. ‘Open it,’ he said.

‘How?’

Harv leaned toward her, caught the upper-right corner under his finger, and flipped it. The whole lid of the thing bent upward around a hinge on the left side, pulling a flutter of cream-colored leaves after it. Underneath the cover was a piece of paper with a picture on it and some more letters.”

The Diamond Age, or, A Young Lady’s Illustrated Primer by Neal Stephenson

# Introduction

Every so often, I like to revisit my book collection. Interacting with my library has an emotional component to it – and more than any other possessions, my books make me nostalgic.

I remember where I was in life when I read the book, or bought the book with the unfulfilled intention to read it. I'm reminded which ex-boyfriend never got his favorite book back. I recall old friends, snippets of classroom discussions, book report projects made of chess pieces and modeling clay (*Through the Looking Glass*, of course). I relive standing in line at midnight for my first glimpse of the last Harry Potter book.

My copy of *The Crucible* is annotated in at least 10 colors, with a key scrawled inside the back cover. My dog-eared edition of *The House of the Spirits* has page edges highlighted green to denote the chapter my group presented in World Literature class. I found a ticket stub for whale-watching tucked between the pages of *The Magician King*. A *Fahrenheit 451* script is tagged with Post-Its from an afternoon I dreamed about producing the play in a moot court auditorium. My trade paperback version of *The Giver* has no cover, a sad replacement for the first edition I once owned and lost, along with the friend who borrowed it.

My Kindle has four “collections”: Games, Patterns, Queue, and Read. Uniform titles appear in black on gray. Dotted bars coldly measure my progress against the length of each book. A shopping cart tries to lure me away from what I already have, in search of something new. Numbers—percentages and times, “locations” and out-of-context page numbers—tell me how far along I am and how far I must go. Pages turn one at a time, or I can jump precisely to the beginning of a chapter, a specific page (if I know the number), or the start of the book. Passages I highlight are stored neatly in a document called “My Clippings,” never to be seen again. The device sits unobtrusively on my nightstand in its plain black cover, never hinting at the infinite worlds locked within.

I got my first Kindle in 2011 after I realized I could read public-domain classics for free. A week later, I exchanged it for the brand-new Kindle Touch, because nothing is less like reading than using arrow keys to inch down menus. It's more comfortable to hold for long periods than most books, and it doesn't strain my eyes like most screens. Turning pages is a bit difficult as a left-hander, but the flash of E Ink as the screen changes rarely bothers me. It's miraculous to carry as many books in my

purse as filled half a truck as I moved from Maryland to Connecticut.

What's missing is almost ineffable, that *je ne sais quoi* that breathes life into every broken spine gathering dust on my shelves.

In the media world, interactive or otherwise, the book isn't the most glamorous selection. The struggling e-reader market would seem to indicate that reading isn't an activity worthy of its own device. But books are one of our oldest and most enduring forms of entertainment, of enlightenment, and it's reasonable to suggest it should be more than just another app on your smartphone. Ruth Wilson says:

"The act of reading a book is arguably unlike any other use to which handheld devices can be put, in that it is a highly personal and involving activity about which readers feel very passionate. Moreover it gives rise to a unique set of design requirements which cannot necessarily be served by hardware intended to perform a multitude of other functions."<sup>1</sup>

It's hard to claim that we're not reading anymore, in a world where we read social media and websites on a constant basis. And yet, with this kind of reading, "Although we are learning a large amount of information, we are not trying to contemplate these facts and relate them to one another."<sup>2</sup> Long-form reading has long-term benefits, from mental stimulation to entertainment, from improved vocabulary to better writing.<sup>3</sup> It's important that we continue to read, and we do still read print books. Why haven't digital books caught on yet?

It has to be the technology. It hasn't met the success criteria laid out by Nancy Herther:

For any new technology product to succeed today, it must either create a transformational change for consumers ... or it must provide some true value as a replacement with a level of excitement, satisfaction, or efficiency that makes the change inevitable in the consumers' eyes.<sup>4</sup>

Ebook readers haven't given users a reason to make the switch. From a usability perspective, there's still plenty of room for improvement. Luca Colombo and Monica Landoni point out:

EBook readers are now more popular than ever but even if availability of titles is no more an obstacle to eBook adoption still there is good margin for their improve-

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1 <http://www.ariadne.ac.uk/issue29/wilson/>

2 Pettigrew, Sarah Ellen. 2015. "The Future of the Book and the Slow Book Movement." In *History of the Book: Disrupting Society from Tablet to Tablet*, 153-159. CC BY-NC. Page 156.

3 Pettigrew, Sarah Ellen. 2015. "The Future of the Book and the Slow Book Movement." In *History of the Book: Disrupting Society from Tablet to Tablet*, 153-159. CC BY-NC. Page 157.

4 Herther, Nancy K. 2008. "The ebook reader is not the future of ebooks." *Searcher: The Magazine for Database Professionals*, September: 26-40. Page 34.

ment as, for the time being, readers are offered flat book-like objects that have lost the quality of paper but have yet to acquire the extra value provided by the new media they sit upon.<sup>5</sup>

This book was written and designed with an eye toward adhering to the best standards of ebook production. It was typeset in Adobe InDesign CC and exported to EPUB3 format, which was then converted to MOBI for Kindle users with Calibre e-book management software. It is also provided in PDF format to maximize usability for all readers.

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5      Colombo, Luca, and Monica Landoni. 2011. "Towards an engaging e-reading experience." *Proceedings of the 4th ACM workshop on Online books, complementary social media and crowdsourcing*. Glasgow, Scotland: ACM. 61-66. Page 61.

# CHAPTER ONE

## *The metaphor of the book*

### What is a book?

**A book is information.** It is an idea or an argument, a story or a vignette. It conveys meaning to the reader. It is a complete set of data, communicating its full message to the reader in a single unit.

**A book has structure.** A book has a beginning and an end, and pages bound together in a specific order. There are common elements familiar to most books: a title page, a copyright page, a table of contents, an introduction, chapters, appendices, and an index. A book is well-organized to allow the reader to focus on the content.

**A book has pages.** Each page contains a finite amount of information in the form of text or images. Pages are collected together and assembled to form a whole. A page is something static; it doesn't change. And yet, it can sometimes be interactive, like a pop-up book.<sup>6</sup> Each turn of a page offers the reader a pause and a breath, and sometimes punctuation: A new chapter begins on a new page to mark the transition between parts.

**A book has a cover.** The cover may be hard or soft, made of leather, or paper barely thicker than its pages. The cover offers protection for the delicate pages within it. It identifies the book, and in many cases, it advertises for it. An illustration on the front cover, a blurb and a key quote on the back give the reader a sense of the character of a book, what they will find when they open it.

**A book has a spine.** The spine is the backbone of the book. It holds everything together and keeps the pages in order. At a glance, it tells you how long the book is; its width is dictated by the number of pages. It is flexible, enabling the reader to open and close and interact with the book. It is labeled, to facilitate storage and easy access. It offers the reader metadata for the book: title, author, and publisher.

For hundreds of years, this is what a book has been. How do you change “one of the most en-

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6 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 456.



trenched technologies in human history”?<sup>7</sup> Even Jeff Bezos, CEO of Amazon, which markets the most popular e-book reader in the world, doesn’t think it can be done. He said to the audience at BookExpo America in 2008, “Anything that lasts 500 years is not easily improved upon. Books are so good you can’t out-book the book.”<sup>8</sup>

The ebook forces us to realize that a book is not its pages, its cover, and its spine. We must reexamine the book as an idea, not a physical object. Monica Landoni and Luca Colombo consider the ideal form of a book:

From a theoretical point of view, looking at the book as a Platonic idea and at the paper book as one of its physical possible representations, would help us think of new instances, including the electronic one, free from limitations inherited from paper and closer to its ideal form.<sup>9</sup>

A book is its content, the information it provides. Everything else is nostalgia.

## What is the book metaphor?

Many, if not most, academic discussions about ebooks will refer to “the book metaphor.”

Skeuomorphs, like the book metaphor, are “‘legacy designs’ that are used ornamentally within the digital realm.”<sup>10</sup> We see skeuomorphs every day, from the ubiquitous Save icon shaped like a floppy disk to the “folders” we organize “files” in to the lined “paper” of the iPhone Notes app. Skeuomorphs give us a frame of reference, a vocabulary to talk about something new by comparing it to something familiar.

The book metaphor improves user experience because it gives readers a recognizable starting point and shapes their expectations.<sup>11</sup> One of the defining features of a book is its structure, and borrowing these features provides a useful shorthand to ease the transition from print book to ebook.

The skeuomorphic elements of an ebook aren’t a perfect analogy. The term “cover” is used to describe a thumbnail image used to identify a book within a digital library, but it doesn’t offer the

7 Herther, Nancy K. 2008. “The ebook reader is not the future of ebooks.” *Searcher: The Magazine for Database Professionals*, September. Page 28.

8 Herther, Nancy K. 2008. “The ebook reader is not the future of ebooks.” *Searcher: The Magazine for Database Professionals*, September. Page 40.

9 Colombo, Luca, and Monica Landoni. 2011. “Towards an engaging e-reading experience.” Proceedings of the 4th ACM workshop on Online books, complementary social media and crowdsourcing. Glasgow, Scotland: ACM. 61-66. Page 61.

10 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 457.

11 Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, *IETE Technical Review*, 26:3, 213-222. Page 213.

same protection or additional information a print book cover provides. Pages are often formatted with margins and displayed as a spread, although there's no spine to create the pages and the edges of the device serve the purpose margins were meant for, holding the book without covering text.<sup>12</sup> An ebook in EPUB format has a spine, an element in the manifest that specifies the default reading order.<sup>13</sup> Ebooks are even organized in libraries, which are usually designed with skeuomorphic bookshelves.<sup>14</sup>

The book metaphor is transitional. Some aspects of the book metaphor may be as indelible as the Save icon, but others will likely fade as ebooks transition into their own media form and resemble print books less.<sup>15</sup> Strict adherence to the book metaphor is a limitation, and it ignores the great potential offered by the technology to create a new, interactive definition of the book.<sup>16</sup>

## A new definition of books

Many attempts have been made to define the ebook, but no one has settled on a standard definition.

- "... book-length publications in digital form, either 'born-digital' or derived from a printed version..."<sup>17</sup>
- "...an electronic representation of a book..."<sup>18</sup>
- "...a digital object that is recognisably book-like..."<sup>19</sup>
- "...any electronic file (e.g., mobi or epub) containing text, which, if in paper form, would be recognized as a book..."<sup>20</sup>
- "...any content that is recognisably 'book-like', regardless of size, origin or composition, but excluding journal publications, made available electronically for reference on any device (hand-

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12 Chandler, Janel. 2015. "The Electronic Book as a Disruptive Technology." In *History of the Book: Disrupting Society from Tablet to Tablet*, 145-151. CC BY-NC. Page 147.

13 <http://www.idpf.org/epub/301/spec/epub-publications.html#sec-spine-elem>

14 Vanderschantz, Nicholas, Claire Timpany, and Annika Hinze. 2015. "Design exploration of eBook interfaces for personal digital libraries on tablet devices." *Proceedings of the 15th New Zealand Conference on Human-Computer Interaction*. Hamilton, New Zealand: ACM. 21-30. Page 23.

15 Vassiliou, Magda, and Jennifer Rowley. 2008. "Progressing the definition of 'e-book'." *Library Hi Tech* 26, no. 3 355-368. Page 362.

16 Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, *IETE Technical Review*, 26:3, 213-222. Page 213.

17 Browne, Glenda, and Mary Coe. 2013. "Ebook navigation: browse, search and index." *The Indexer* 31, no. 1 26-33. Page 289.

18 Garrish, Matt. 2011. *What is EPUB3?* Sebastopol: O'Reilly Media. Page 1.

19 Gibb, Chris Gibson Forbes. 2011. "An evaluation of second-generation ebook readers." *The Electronic Library* 29 (3): 303-319. Page 307.

20 Merga, Margaret K. 2015. "Do Adolescents Prefer Electronic Books to Paper Books?" *Publications* 3, no. 4 237-247. Page 238.

held or desk-bound) that includes a screen...”<sup>21</sup>

Much has been made over the fact that no consistent definition has been reached. Laura Manley and Robert P. Holley note that “The word ‘ebook’ is an ambiguous umbrella term that encompasses several concepts.”<sup>22</sup> Magda Vassiliou and Jennifer Rowley agree that “despite a few widely accepted definitions there is no consensus on the definition of the term e-book, and, further that consensus on the definition would be beneficial for both researchers and practitioners.”<sup>23</sup>

Vassiliou and Rowley proposed a two-part definition:

(1) An e-book is a digital object with textual and/or other content, which arises as a result of integrating the familiar concept of a book with features that can be provided in an electronic environment.

(2) E-books, typically have in-use features such [as] search and cross reference functions, hypertext links, bookmarks, annotations, highlights, multimedia objects and interactive tools.<sup>24</sup>

This definition goes further than most, and in the first part relies on the understanding of the print book metaphor to elucidate the digital book being defined. Despite cautioning that “any persistent definition of e-book needs to take a very cautious approach to the mention of specific technologies,”<sup>25</sup> they have limited the scope of what qualifies as a book, electronic or otherwise. This definition seems to exclude, for example, children’s books and novels.

We are still far from an adequate definition of an ebook.

## What is an ebook?

**An ebook is electronically transmissible.** The “e” in ebook stands for “electronic,” and an ebook should be stored digitally. In theory, an ebook can be uploaded and downloaded via the internet, even if it’s not stored in a form that’s easily transmitted, or digital rights management (DRM) disallows it..

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21 Armstrong, Chris. 2008. “Books in a virtual world: the evolution of the e-book and its lexicon.” *Journal of Librarianship and Information Science*, Vol. 40 No. 193 193-206. Page 199.

22 Manley, Laura, and Robert P. Holley. 2012. “History of the Ebook: The Changing Face of Books.” *Technical Services Quarterly* 292-311. Page 293.

23 Vassiliou, Magda, and Jennifer Rowley. 2008. “Progressing the definition of “e-book”.” *Library Hi Tech* 26, no. 3 355-368. Page 355.

24 Vassiliou, Magda, and Jennifer Rowley. 2008. “Progressing the definition of “e-book”.” *Library Hi Tech* 26, no. 3 355-368. Page 363.

25 Vassiliou, Magda, and Jennifer Rowley. 2008. “Progressing the definition of “e-book”.” *Library Hi Tech* 26, no. 3 355-368. Page 362.

**An ebook is a book.** The pages, cover, and spine are themselves unimportant. The content is the key aspect of a book, and this part of the definition should be preserved. An ebook should primarily be a text- and image-based medium, although multimedia content may supplement it to a great extent.

**An ebook is screen-based.** Because an ebook is stored as data, it requires a device of some sort to read. Whether that is a computer, a multipurpose tablet, or a dedicated e-reading device, an ebook cannot be used in isolation.

**An ebook is structured.** Whether or not an ebook is read in a prescribed order, it has a default structure. The difference between an ebook and a website is the specific order in which it is presented. An ebook should be highly navigable, however, and easily accessible from any point.

**An ebook is complete.** An ebook is not continuously updated or serialized. A journal article does not qualify as an ebook, because it is only a part of a larger whole. An ebook may have volumes or sequels, but these are more substantial than issues. Moreover, the content is decided on and published by its creators, and can't be changed by the reader.

# CHAPTER TWO

## *The history of reading*

### The first information revolution

The printing press was the very first monumental change in the way the public reads and accesses books.

Prior to the printing press, books were hand-printed—a laborious, time-consuming, expensive process that meant only the wealthy could afford them and most people only saw books in church. When Johannes Gutenberg introduced movable type to the world in 1445,<sup>26</sup> he didn't just create a revolution in the publishing industry (then also known as the monastery). He contributed to a fundamental change in society. “Johannes Gutenberg invented the printing press. Martin Luther turned that press into a revolution,” says Cory Doctorow.<sup>27</sup>

When information was in the hands of only the elite, the populace had to rely on the authorities to interpret it for them. Gutenberg's press allowed families of any economic status to have a personal family Bible.<sup>28</sup> Copies could be printed in languages other than Latin, so people could read the religious texts for themselves and form their own opinions about them. After Luther nailed his 95 Theses to the church door, more than 300,000 copies of them were printed across Europe. In addition to the Protestant Reformation, the printing press helped fuel the decline of Latin.

The ease of printing also affected the scientific community, leading more scientists to publish their discoveries. The information overload led to major developments in reporting, including the enduring traditions of peer-reviewing articles, the scientific method, and scientific journals with standardized formatting.<sup>29</sup> As with religious tracts, more of this information was printed in common tongues, rather than Latin, and knowledge was spread faster than it had ever been before.

Ebooks have taken the democratization of knowledge even further. The barriers to publishing

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26     McDaniel, Richelle. 2015. “The Spread of Knowledge via Print.” In *A History of the Book: Disrupting Society from Tablet to Tablet*, 29-42. CC BY-NC. Page 29.

27     Doctorow, Cory. 2004. *Ebooks: Neither E, Nor Books*. Project Gutenberg. Page 22.

28     McDaniel, Richelle. 2015. “The Spread of Knowledge via Print.” In *A History of the Book: Disrupting Society from Tablet to Tablet*, 29-42. CC BY-NC. Page 30.

29     McDaniel, Richelle. 2015. “The Spread of Knowledge via Print.” In *A History of the Book: Disrupting Society from Tablet to Tablet*, 29-42. CC BY-NC. Pages 35-36.



an ebook are almost nonexistent. An ebook can be published using inexpensive or even free software downloaded to a personal computer. An ebook can be transmitted almost instantaneously to anywhere in the world.

## The memex

The ebook was conceived of much earlier than you might think, as was the ebook reader.

In July 1945, an article called “As We May Think,” by Vannevar Bush, was published in *The Atlantic Monthly*. Bush was the director of the Office of Scientific Research and Development during World War II. As the war drew to a close, he urged “that men of science should then turn to the massive task of making more accessible our bewildering store of knowledge.”<sup>30</sup>

He saw in the incredible amounts of available information no existing way to reliably categorize it. “A record, if it is to be useful to science,” he wrote, “must be continuously extended, it must be stored, and above all it must be consulted.”<sup>31</sup> The conventions of indexing don’t match the way the human brain functions.

Instead, he believed, the mind operates by association. “With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts, in accordance with some intricate web of trails carried by the cells of the brain.”<sup>32</sup>

Bush’s inspirational ideas about information trails led to Douglas Englebart and Ted Nelson developing the idea of hypertext.<sup>33</sup>

Further, Bush envisioned a device he called the memex, “a sort of mechanized private file and library.”<sup>34</sup> The device would be the size of a desk and hold all a reader’s books and records, easily accessible enough to serve as “an enlarged intimate supplement to his memory.”<sup>35</sup>

The desk device would be the reader’s primary workplace. It would have translucent screens to project reading material. The primary contents of the machine are purchased on microfilm and inserted into the device. The reader can also add business correspondence and directly enter content by

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30 Bush, Vannevar. 1945. “As We May Think.” *The Atlantic Monthly*, July. Page 1.

31 Bush, Vannevar. 1945. “As We May Think.” *The Atlantic Monthly*, July. Page 4.

32 Bush, Vannevar. 1945. “As We May Think.” *The Atlantic Monthly*, July. Page 14.

33 Laura Manley & Robert P. Holley (2012) History of the Ebook: The Changing Face of Books, *Technical Services Quarterly*, 29:4, 292-311, Page 294.

34 Bush, Vannevar. 1945. “As We May Think.” *The Atlantic Monthly*, July. Page 14.

35 Bush, Vannevar. 1945. “As We May Think.” *The Atlantic Monthly*, July. Page 15.

photographing it.

The contents can be consulted via index, with easy-to-remember codes to bring up certain items and a code book available at the tap of a key. There are levers to page through a book at varying speeds, just fast enough to recognize each page, 10 pages at a time, or 100 pages at a time. Another button calls up the first page of the index. The reader can leave one item displayed while he calls up another. He can add notes and annotations with photography or a stylus.

The memex is considered the origin of the idea for an electronic book.<sup>36</sup> As well as inspiring hypertext, it would go on to inspire the Dynabook.

## The Dynabook

Inspired by Bush, Alan Kay in 1968 proposed the concept of the Dynabook, a book-sized paper replacement device meant particularly for children.<sup>37</sup> He wanted to explore how technology could augment learning for children, to create “a better ‘book’, one which is active (like the child) rather than passive. It would be something with the attention-grabbing powers of TV, but controllable by the child rather than the networks.”<sup>38</sup>

The specifications of the device were:

The size should be no larger than a notebook; weight less than 4lbs.; the visual display should be able to present at least 4000 printing quality characters with contrast ratios approaching that of a book; dynamic graphics of reasonable quality should be possible; there should be removable local file storage of at least one million characters (about 500 ordinary book pages) traded off against several hours of audio (voice/music) files.

A cardboard mockup of the Dynabook, which looked a lot like a laptop but was flat like a tablet, had dimensions based on the size of the saddlebags used to carry books at the time. It indirectly inspired the Apple computer.<sup>39</sup>

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36 Laura Manley & Robert P. Holley (2012) History of the Ebook: The Changing Face of Books, *Technical Services Quarterly*, 29:4, 292-311, Page 294.

37 Doman, Todd O. 2001. “Electronic Books: An Overview of the First Two Generations.” *Electronic Theses and Dissertations*. Page 9.

38 Kay 72. Page 1.

39 Doman, Todd O. 2001. “Electronic Books: An Overview of the First Two Generations.” *Electronic Theses and Dissertations*. Page 10.

# Project Gutenberg

In January 2009, Michael Hart recounted in an interview the inspiration behind Project Gutenberg and how the Declaration of Independence came to be the first ebook as early as 1971.

On July 4, 1971, while still a freshman at the University of Illinois (UI), I decided to spend the night at the Xerox Sigma V mainframe at the UI Materials Research Lab, rather than walk miles home in the summer heat, only to come back hours later to start another day of school. I stopped on the way to do a little grocery shopping to get through the night, and day, and along with the groceries they put in the faux parchment copy of The U.S. Declaration of Independence that became quite literally the cornerstone of Project Gutenberg. That night, as it turned out, I received my first computer account - I had been hitchhiking on my brother's best friend's name, who ran the computer on the night shift. When I got a first look at the huge amount of computer money I was given, I decided I had to do something extremely worthwhile to do justice to what I had been given. This was such a serious, and intense thought process for a college freshman, my first thought was that I had better eat something to get up enough energy to think of something worthwhile enough to repay the cost of all that computer time. As I emptied out groceries, the faux parchment Declaration of Independence fell out, and the light literally went on over my head like in the cartoons and comics... I knew what the future of computing, and the internet, was going to be... 'The Information Age.' The rest, as they say, is history.<sup>40</sup>

On that night, the idea to convert as many public domain texts as possible to a digital format was born. Between 1971 and 1989, Hart and volunteers digitized 10 books in the simplest format possible, including the U.S. Constitution and the King James Bible. From there, the pace picked up; by 1997 there were 1,000 titles and they reached 2,000 in 1999.<sup>41</sup> Today, Project Gutenberg boasts more than 53,000 free ebooks, including audiobooks and self-published works.<sup>42</sup>

## 20<sup>th</sup>-century e-readers

Despite the early introduction of the memex, Project Gutenberg, and the Dynabook, "...it was not until the 1980s and '90s that ebook readers began to achieve a significant standing in the industry or garner an interest in the marketplace."<sup>43</sup>

### First generation

Many early ebooks were produced on CD-ROM, which was first introduced in 1985.<sup>44</sup> However,

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40 Lebert, Marie. 2009. *PROJECT GUTENBERG (1971-2009)*. Toronto: NEF, University of Toronto.

41 Lebert, Marie. 2009. *PROJECT GUTENBERG (1971-2009)*. Toronto: NEF, University of Toronto.

42 [www.gutenberg.org](http://www.gutenberg.org)

43 MacWilliam, Angus. 2013. "The engaged reader." *Publishing research quarterly* 29, no. 1 1-11. Page 2.

44 Herther, Nancy K. 2008. "The ebook reader is not the future of ebooks." *Searcher: The Magazine for Database Professionals*,

a few devices, such as the Sony Data Discman and the Franklin Bookman, were already entering the market. These first-generation devices had many usability issues, such as:

use of batteries for power, which limited multimedia capability; small physical size of the screen; poor screen resolution; closed, proprietary architectures that limited title innovation and user choice; search engines that offered few choices; slow response; and the lack of such key features as note fields and the ability to link to other computers (using, at that time, DOS or Apple) (4).<sup>45</sup>

## Sony Data Discman

<b>Released</b>	1992
<b>Weight</b>	1.5 pounds
<b>Battery life</b>	3 hours, plus 7 hours in external “power-pack”
<b>Screen</b>	3.5-inch black-and-white LCD
<b>Price</b>	\$550
<b>Memory</b>	200 MB
<b>Review</b>	<i>Popular Mechanics</i> . Jan 1992. Frank Vizard. Pages 87-88. “Portable Data Discs.”

The Sony Data Discman read books from “a 3.15-in. compact disc housed in a protective caddy” inserted in a slot under the device’s keyboard. When it was released, 23 titles were available. Vizard marvels at the device’s navigability: “Retrieving information is easier than using a book’s index. As already demonstrated, you can type in a key word and a listing of related topics will appear. ... The machine can also be programmed to ask four questions and your responses function as key words.” The downside mentioned in this review is that none of the data could be downloaded onto a computer.

## Rocket eBook (1998)

<b>Released</b>	1998
<b>Weight</b>	22 ounces
<b>Battery life</b>	20 hours (with backlight), 40 hours (without backlight)
<b>Screen</b>	4.5” x 3” black-and-white 106 dpi touch screen

<b>Price</b>	\$199 (regular), \$269 (Pro)
<b>Memory</b>	4 MB (regular), 16 MB (Pro)
<b>Review</b>	Daniel Chvatik. ATPM. May 2000. “Review: Rocket eBook Pro.”

The NuvoMedia Rocket eBook came with an integrated stylus and a cradle to connect the device to your computer and download books. Titles were available on the Barnes & Noble and Powell’s websites. It had Verdana 10-point and 14-point font included, and additional fonts could be uploaded. One complaint from Chvatik was the price of the books: “Given the marginal cost of publishing a book electronically, you would expect that eBooks would be somewhat cheaper than real paper books, especially given your up-front investment in the reader.” In general, he found the device too buggy and expensive to meet its potential.

## Second generation

The next generation of e-readers was marked by “modern capabilities, greater memory, better screen resolution, and a more robust selection of available titles.”<sup>46</sup>

### Everybook Dedicated Reader

<b>Released</b>	2000 (almost)
<b>Weight</b>	3.65 pounds
<b>Screen</b>	Two 300 dpi 8.5” x 11” full-color screens
<b>Price</b>	\$1600
<b>Review</b>	Todd O. Doman. “Electronic Books: An Overview of the First Two Generations.” 2001.

The Everybook Dedicated Reader never made it to market as an ebook. At more than three-and-a-half pounds, the device was far too heavy for an e-reader, so the company changed focus and tried to market it as a laptop replacement instead. The price was out of the realm of possibility for average consumers, but not for corporations that wanted to replace the printed company manual. “By preparing service manuals in e-book form, the corporation would eliminate printing costs, as well as such

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<sup>46</sup> Herther, Nancy K. 2008. “The ebook reader is not the future of ebooks.” *Searcher: The Magazine for Database Professionals*, September: 26-40. Page 33.



hidden costs as the amount of time wasted traveling from shelf to machine and back again, the storage space required by the manuals, the shipping costs to get them to the technicians, etc.”

## Softbook Reader

<b>Released</b>	1999
<b>Weight</b>	2.9 pounds
<b>Battery life</b>	3-4 hours
<b>Screen</b>	6” x 8” grayscale, backlit, touch LCD
<b>Price</b>	\$299.95 (regular), \$599.95 (Pro)
<b>Memory</b>	8 MB
<b>Review</b>	Daniel Chvatik. ATPM. May 2000. “Review: Softbook Reader.”

The Softbook Reader had a protective leather cover and an internal modem that connected to a phone line. Pages were navigated with a thumb button: “Tilting the bar to the left or right, pages you backward or forward through your virtual books or magazines. Although it sounds a bit awkward, it actually feels quite natural.” This model opted for a larger display that resulted in a more “book-like” feel. It didn’t offer a note function, but you could draw notes on the page or insert pages on which to draw with the drawing tool.

## 21<sup>st</sup>-century e-readers

### Third generation

In April 2001, E Ink introduced the world’s first electronic paper display.<sup>4754</sup> The paper-like screen offered a new dimension to the book metaphor and marked an important development in e-reader technology, “as it reduces screen glare and allows a display that possesses a paper-like high contrast appearance, ultra-low power consumption, and a thin, light device. This gives the viewer the experience of reading from paper, while having the power of updatable information.”<sup>48</sup>

The two most recognizable and enduring brands of e-reader were introduced in this era: Ama-

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47 <http://www.eink.com>

48 Gibb, Chris Gibson Forbes. 2011. “An evaluation of second-generation ebook readers.” *The Electronic Library* 29 (3): 303-319. Page 305.

zon's Kindle and Barnes & Noble's Nook.

## Kindle (2007)

<b>Released</b>	2007
<b>Weight</b>	10.3 ounces
<b>Battery life</b>	1 week+ (without wireless)
<b>Screen</b>	4.9" x 3.6" grayscale E Ink screen
<b>Price</b>	\$400
<b>Memory</b>	185 MB plus SD memory card
<b>Review</b>	David Carnoy. November 20, 2007. CNET. "Amazon Kindle (first generation) re-view"

The first-generation Kindle may have lost out to its contemporaries on design, but its Whispernet network was considered "revolutionary." The E Ink viewer brought with it the usability issue of the flashing screen, but compensated for it by reducing eye strain and enabling reading in direct sunlight. The massive Amazon store finally put to rest the question of ebook availability, and wireless downloading made obtaining books practically effortless. It still had problems when it came to navigation, though. "On a more critical note, we had some trouble using the "location" jumping feature, mostly because we couldn't figure out what the location description numbers on the screen actually referred to."

## Nook

<b>Released</b>	2009
<b>Weight</b>	11.2 ounces
<b>Battery life</b>	10 days
<b>Screen</b>	6" grayscale E Ink display and 3.5" color multi-touch screen
<b>Price</b>	\$260
<b>Memory</b>	2 GB plus microSD slot
<b>Review</b>	Eliot Van Buskirk. <i>Wired</i> . October 20, 2009. "Barnes & Noble's Shiny, Sharing-Friendly 'Nook' eBook Reader"

Released the same year as Kindle’s second iteration, the Barnes & Noble Nook offered consumers several significant advantages over the Amazon device. The color touchscreen pales in comparison to the Nook’s support for the open ePUB format and LendMe feature for sharing books. It didn’t quite stack up in areas like battery life and weight, however. “Like Amazon’s Kindle, Barnes & Noble’s Nook lets you highlight and annotate content. But Nook’s battery life is 10 days (updated), while the Kindle keeps you reading for 14 — even though at 11.2 ounces the Nook weighs an ounce more.”

## Fourth generation

The age of the tablet computer may be considered the fourth generation of e-readers. E-reading on multifunctional devices represents a return to the early days of e-reading.<sup>49</sup>

### Kindle Oasis (2016)

Released	2016
Weight	4.6 ounces
Battery life	2 weeks, 9 weeks with cover
Screen	6” cylindrical backlit E Ink screen
Price	\$289.99-\$379.99
Memory	4 GB
Review	Katherine Boehret. May 6, 2016. The Verge. “Amazon Kindle Oasis review.”

With the Kindle Oasis, Amazon designed a device so small and light and book-like that every bookworm would want it, but none would be able to afford it. It took ergonomics to the next level with a design that’s thicker on the side you’re supposed to hold. “It all comes down to design: one edge of the Oasis is thicker than the other, so its center of gravity rests in whatever hand is holding it. The result? Reading from this Kindle feels less like holding a screen and more like holding a mini magazine with its pages folded back.”

### Kobo Aura One (2016)

Released: 2016

49 Laura Manley & Robert P. Holley (2012) History of the Ebook: The Changing Face of Books, Technical Services Quarterly, 29:4, 292-311. Page 293.

Weight: 8.1 ounces

Battery life: Up to 1 month

Screen: 7.8" 300 dpi E Ink screen

Price: \$229.99

Memory: 8 GB

Review: Timothy Torres. *PC Magazine*. August 17, 2016. "Kobo Aura One."

The distinguishing feature of the Kobo Aura One's is that it's waterproof. It's also the largest and heaviest currently on the market, but it's purportedly still comfortable to hold for long periods. The front lighting automatically adjusts for brightness and temperature according to ambient conditions. The Aura One also makes it easy to borrow library ebooks. "Kobo makes it easy to borrow ebooks via OverDrive, a service that pulls from the selections of local libraries. All you need is a free Overdrive account, a Facebook log-in, or a library card number."

# CHAPTER THREE

## *Devices and formats*

An ebook alone is nothing but bits, and an e-reader without an ebook is equally useless. The two combine to create the ereading experience. As Ruth Wilson defines it, “Ebook interfaces can be considered to comprise two components: the text of the book, and the technology used to display the text (hardwire and peripherals surrounding a screen, enabling the reader to interact with the book).”<sup>50</sup>

### E-reading devices

There are myriad types of devices on which to read an ebook. Mostly, they fall into one of two categories: dedicated reader or multipurpose device.<sup>51</sup> A multipurpose tablet or other device is seldom judged primarily on its functionality as an e-reader. There are several major characteristics on which to judge a dedicated reader and compare its usability with a multipurpose device.

#### Build

The appearance of an e-reader includes its form factor (compactness and portability)<sup>52</sup>, its ergonomic properties, and its durability. A print book can take a lot of abuse, while most electronic devices are on the fragile side. A good e-reader is judged by how resilient it is to damage.<sup>53</sup> It should also be lightweight and comfortable enough to hold in one hand for long periods.<sup>54</sup>

#### Display

An e-reader’s display should be, at a minimum, high resolution and high contrast. It should also be easy to read in different environments and lighting conditions, including the dark and direct sunlight.<sup>55</sup> As long as the display is high-quality, the difference between, for example, e-ink and LCD,

50 Wilson, Ruth. The “look and feel” of an ebook: considerations in interface design. 17th ACM Symposium on Applied Computing (SAC 2002). Universidad Carlos III de Madrid, Spain, March 10-14, 2002.

51 Gibb, Chris Gibson Forbes. 2011. “An evaluation of second-generation ebook readers.” *The Electronic Library* 29 (3): 303-319. Page 306.

52 Richardson Jr, John V., and Khalid Mahmood. 2012. “eBook readers: user satisfaction and usability issues.” *Library Hi Tech* (Library Hi Tech) 30 (1): 170-185. Page 182.

53 Wilson, Ruth. The “look and feel” of an ebook: considerations in interface design. 17th ACM Symposium on Applied Computing (SAC 2002). Universidad Carlos III de Madrid, Spain, March 10-14, 2002.

54 Wilson, Ruth. The “look and feel” of an ebook: considerations in interface design. 17th ACM Symposium on Applied Computing (SAC 2002). Universidad Carlos III de Madrid, Spain, March 10-14, 2002.

55 Wilson, Ruth. The “look and feel” of an ebook: considerations in interface design. 17th ACM Symposium on Applied Computing (SAC 2002). Universidad Carlos III de Madrid, Spain, March 10-14, 2002.



may not be significant to the user.<sup>56</sup> In addition to user preferences, there may also be health concerns to consider when it comes to the best e-reader display: “Research suggests that artificial light exposure resulting from using e-readers at night may interfere with users’ ability to sleep.”<sup>57</sup>

## Efficiency

Battery life is a significant concern for e-reading devices. A print book doesn’t have to worry about running out of juice. Margaret Merga points out that, “while eBooks may have the advantage of easy initial access, print books may provide easier ongoing access, as they are not dependent on device recharging...”<sup>58</sup>

## Interface

This largest category includes the device’s software, its library, how the user interacts with a book, how the device interacts with external input, and how robust it is. There’s no such thing as planned obsolescence for a print book. As with any digital technology, however, it’s easy for the software to outpace the hardware meant to use it. One particularly important feature of an e-reader is how pages are turned. Wilson says, “Some readers feel that the action of turning pages slows down the reading process, and that alternative methods of moving through a book offered on electronic devices, such as turning wheels and pressing keys or buttons, increase the speed at which they read the book.”<sup>59</sup>

## Formats

There are several different formats used for ebooks, and the most popular are PDF and EPUB.

In an academic context, as described by Christina Mune and Ann Agee, “PDF (11) and HTML (9) represent the most popular formats available on the ebook platforms evaluated and some platforms offered both. Platforms also use EPUB (4), Flash (3), TXT (1), Kindle (1), and XML (1). PDFs, in conjunction with Adobe Digital Editions, provided the most flexibility to users in a number of areas.”<sup>60</sup>

56 Richardson Jr, John V., and Khalid Mahmood. 2012. “eBook readers: user satisfaction and usability issues.” *Library Hi Tech* (Library Hi Tech) 30 (1): 170-185. Page 183.

57 Merga, Margaret K. 2015. “Do Adolescents Prefer Electronic Books to Paper Books?” *Publications* 3, no. 4 237-247. Page 239.

58 Merga, Margaret K. 2015. “Do Adolescents Prefer Electronic Books to Paper Books?” *Publications* 3, no. 4 237-247. Page 238.

59 Wilson, Ruth. The “look and feel” of an ebook: considerations in interface design. 17th ACM Symposium on Applied Computing (SAC 2002). Universidad Carlos III de Madrid, Spain, March 10-14, 2002.

60 Mune, Christina, and Ann Agee. 2015. “Ebook Showdown: Evaluating Academic Ebook Platforms from a User Perspective.” *Creating Sustainable Community: The Proceedings of the ACRL 2015 Conference*. Portland, Oregon. 218-224. Page 221.

## PDF

PDF, portable document format, is a file type designed to be viewable on various devices exactly as it was authored, whether or not the user has the same software and fonts the author used to create it. Each page includes text, images or media, so “A PDF file is a physical container in a file system containing a PDF document and other data such as version and object catalog.”<sup>61</sup>

While it can translate a wide variety of complex formatting to a cross-platform format and support inline media and even Javascript,<sup>62</sup> there are several disadvantages to its use as an ebook format. PDFs do not allow for manipulation of font size, so the only way to read a document on a small screen is awkwardly panning and zooming. In addition, PDF is a proprietary format owned by Adobe, which presents challenges for openness and interoperability.<sup>63</sup>

## EPUB

EPUB is the open-source standard format for ebooks, developed by the International Digital Publishing Forum. An EPUB publication, in essence, is a ZIP file of a website. According to the IDPF:

An EPUB file (extension: .epub) is simply a ZIP archive that contains what is in effect an entire website, including HTML files, all necessary images, CSS style sheets and other assets, plus additional structure and information (“metadata”) that makes the content able to be reliably consumed from beginning to end by any application or device that’s compatible with the EPUB specifications (“EPUB reading systems” or just “reading systems” for short).

EPUB is supported on many devices, and it “enables content to be created by an author or publisher once, via different tools and services, distributed through many channels, and viewed, online or offline, using many different devices and applications.”<sup>64</sup>

## Enhanced ebooks

In most cases, ebooks can be described by their similarity to the printed book. In the case of enhanced ebooks, they are better described by their deviation from the print book metaphor. Enhanced

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61 Lee, Kyong-Ho, Nicolas Guttenberg, and Victor McCrary. 2002. “Standardization aspects of eBook content formats.” *Computer Standards & Interfaces Vol. 24 Issue 3* 227-239. Page 233.

62 Lee, Kyong-Ho, Nicolas Guttenberg, and Victor McCrary. 2002. “Standardization aspects of eBook content formats.” *Computer Standards & Interfaces Vol. 24 Issue 3* 227-239. Page 234.

63 Lee, Kyong-Ho, Nicolas Guttenberg, and Victor McCrary. 2002. “Standardization aspects of eBook content formats.” *Computer Standards & Interfaces Vol. 24 Issue 3* 227-239. Page 235.

64 <http://idpf.org/news/epub-31-now-proposed-specification>

ebooks are characterized by “multimodal” features within the text that take the ebook beyond text on a screen.<sup>65</sup>

Enhanced ebooks, sometimes referred to as book apps, incorporate any manner of images, videos, audio, animations, text annotations, and other interactive features. “Enhanced” traditionally has a specific meaning in software, but has become something of a catch-all term for ebook embellishments, according to Betty Sargeant:

Many discussions involving apps and ebooks include the descriptor ‘enhanced.’ Enhancement is a word that has historically been used to describe a specific improvement in software upgrades. Yet this term now appears to characterise a broad variety of detail relating to the digital book.<sup>66</sup>

This semantic anomaly is only the beginning of the definitional quibbles over the enhanced ebook. Is it really a book? Does the user really read it? Angus MacWilliams asserts that an enhanced ebook experience is more like playing a game than reading a book.<sup>67</sup> Sargeant agrees that the higher level of interactivity makes readers more active, so they go from “reader” to “user.”<sup>68</sup>

Modern readers—or users—expect fully immersive digital experiences like those they receive from other media.<sup>69</sup> The question is whether that’s truly the most desirable outcome of reading a book. MacWilliams found that three-quarters of his participants said their favorite aspect of reading was relaxation, and “the heightened interactivity and layers of media to be found in enhanced ebooks might change the focus from relaxation to entertainment and fun.”<sup>70</sup>

The key to delivering enhanced ebooks that do more than distract the reader from the intended activity is to ensure that the enhancements do service to the content. Peter Costanzo believes the key is “that interactive ebooks be developed with the long term in mind, with less expectation of being a blockbuster, but instead be elegantly simple in design/functionality, as well as entertaining, educational and utilitarian.”<sup>71</sup>

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65 Lamb, Annette. 2011. “Reading Redefined for a Transmedia Universe.” *Learning & Leading with Technology* 12-17. Page 13.

66 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 461.

67 MacWilliam, Angus. 2013. “The engaged reader.” *Publishing research quarterly* 29, no. 1 1-11. Page 3.

68 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 461.

69 Lamb, Annette. 2011. “Reading Redefined for a Transmedia Universe.” *Learning & Leading with Technology* 12-17. Page 14.

70 MacWilliam, Angus. 2013. “The engaged reader.” *Publishing research quarterly* 29, no. 1 1-11. Page 7.

71 Costanzo, Peter. 2014. “The Real Reason Enhanced Ebooks Haven’t Taken Off (Or, Evan Schnittman Was Right... For the Most Part).” *Digital Book World*. May 23. Accessed November 5, 2016. <http://www.digitalbookworld.com/2014/the-real-reason-enhanced-ebooks-havent-taken-off-or-evan-schnittman-was-right-for-the-most-part/>.

While the features of enhanced ebooks are often an improvement to the user experience, the price tag attached may be prohibitive. Designing for one operating system can require several versions, much less making something suitable to all the devices on the market. “iOS apps are custom designed to suit the screen dimensions and the resolution of each Apple device. This means that each app may need to be redesigned in order to be compatible with upgraded and newer devices. As a consequence, there are high production costs associated with making iOS apps.”<sup>72</sup>

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72 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 460.

# CHAPTER FOUR

## *The ebook experience*

In addition to the literacy required to read a book, a certain amount of technical literacy is also required when reading an ebook. Since print books are usually something we have learned to use since childhood, the language of the book metaphor is instructional as the user becomes acquainted with the device. Usability is vital because the user should be focused on the content of the book and not the technology. The process should be seamless and nearly invisible, helping the user to enter a state of flow.

### Page design

Along with the device itself, users will be interacting constantly with the content of the ebook, so page design has a significant impact on usability and user satisfaction.<sup>73</sup>

Studies suggest that users prefer moderation in ebook page design, expressing desire for neither too much nor too little content on a single page,<sup>74</sup> as well as some but not an overwhelming amount of color.<sup>75</sup>

Users don't want to be faced with a "wall of text" while reading, and they showed preferences for ways to break up the text, such as shorter paragraphs, space between paragraphs (but not so much as to isolate each one), and interspersed figures.<sup>76</sup> The ideal amount of content for one page is about the same as a print book, long enough that the amount of virtual page-turning is manageable, but not so long as to require scrolling.<sup>77</sup>

Fonts are another area of importance in page design, and they should be chosen carefully. Serif fonts are best for long reading; sans-serif fonts are easily readable and good for headers; display fonts

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73 Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, IETE Technical Review, 26:3, 213-222. Page 213.

74 Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, IETE Technical Review, 26:3, 213-222. Page 218.

75 Wilson, Ruth. The "look and feel" of an ebook: considerations in interface design. 17th ACM Symposium on Applied Computing (SAC 2002). Universidad Carlos III de Madrid, Spain, March 10-14, 2002.

76 Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, IETE Technical Review, 26:3, 213-222. Page 218.

77 Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, IETE Technical Review, 26:3, 213-222. Page 220.



should be limited to decorative purposes.<sup>78</sup>

In 2015, Amazon released its Bookerly font, designed from scratch for maximum readability on an e-Ink screen. John Brownlee describes its appearance as “something like if Baskerville, a 225-year-old typeface that has been shown to shape our perception of truth, and Caecilia made a baby.”<sup>79</sup>

Around the same time, Google released its own custom ebook typeface for Android devices, Literata.<sup>80</sup>

## Comprehension

Whether people prefer reading on a device may be a moot point if they can’t understand what they’re reading. Comprehension is a fundamental part of the reading experience.

Results have been mixed in studies about reading comprehension on an e-reading device. Most studies find little to no difference between reading on paper and screen, usually trending negative for the device. Several studies report that users read slower on devices.<sup>81</sup>

When it comes to remembering what they read, most users are about equal on a device and a paper copy. Interestingly, users remember the order of an event slightly less well on a device.<sup>82</sup> This may be because of the tactile sensation of the pages and the ever-present sense of how far along you are in a paper book. On a device, it’s only possible to see—not feel—how far along you are, and often only when you’re looking for it.

The weight of the pages in your hand may function as a subconscious reminder of where you are in the timeline of the book, and turning a page is a physical marker of the passage of time. One study showed that comprehension varied between whether a book was progressed by virtual page-turning or by scrolling.<sup>83</sup>

In one study, it was reported that reading on a device is more effective when it’s linear text,

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78     Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, IETE Technical Review, 26:3, 213-222. .Page 219.

79     <https://www.fastcodesign.com/3046678/the-kindle-finally-gets-typography-that-doesnt-suck>

80     <http://thenextweb.com/google/2015/05/18/google-announces-literata-its-new-e-book-typeface/>

81     Connell, Caroline, Lauren Bayliss, and Whitney Farmer. 2012. “Effects of eBook Readers and Tablet Computers on Reading Comprehension.” *International Journal of Instructional Media* 39 (2): 131-141. Pages 133, 136 and 137.

82     McKay, Dana, and George Buchanan. 2016. “You Can Check It Out But It Will Never Leave: Characterising Borrowing Patterns.” *Proceedings of the 2016 ACM on Conference on Human Information Interaction and Retrieval*. Chapel Hill, North Carolina: ACM. 203-212. Page 204.

83     Connell, Caroline, Lauren Bayliss, and Whitney Farmer. 2012. “Effects of eBook Readers and Tablet Computers on Reading Comprehension.” *International Journal of Instructional Media* 39 (2): 131-141. Page 133.

such as a novel. In nonfiction and nonlinear texts, where navigation and accessing the book at various points are important, comprehension and usability decrease.<sup>84</sup>

## Navigation

Ease of navigation in a digital book over a print book should be a no-brainer. Digital text is searchable, after all. It has hyperlinks. However, in practice, users often find ebooks harder to navigate than print books.<sup>85</sup>

For good usability, there should be improvements in the way users search and browse, as well as provision of a high-quality index. Glenda Browne and Mary Coe say, “Good practice for ebook reading devices of the future will mean offering users a choice of access methods, including efficient free text search functionality and easy browsing, as well as a well-conceived index.”<sup>86</sup>

## Search

The text in ebooks is searchable, one of their most lauded features. Keyword search is a convenience, but most interfaces make the process more cumbersome than it is useful. Meyers, as quoted by Browne and Coe, compares the arduous process to searching a print book:

How’s a reader supposed to decide which of these results is the one she wants? Think about how cumbersome it is to tap each item, get whisked off to its location, and then have to navigate back to the starting spot. What a pain. In a print book, at least you’ve got fingers, bookmarks, or a coaster to hold your spot as you leaf around (reviewing index entries, for example). But in an e-reader device, the disruption readers suffer after following a link is significant.<sup>87</sup>

Since search capabilities vary by device, Browne and Coe recommend looking for an e-reader with: a separate search box for search results; stemming functionality; case-sensitive searching; use of Boolean operators; and a search feature that’s easy to get to.<sup>88</sup>

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84 Connell, Caroline, Lauren Bayliss, and Whitney Farmer. 2012. “Effects of eBook Readers and Tablet Computers on Reading Comprehension.” *International Journal of Instructional Media* 39 (2): 131-141. Page 133.

85 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 290.

86 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 295.

87 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 291.

88 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 291-292

## Browse

Studies show that browsing is one of the least liked aspects of using an ebook.<sup>89</sup> Skimming and looking for a particular passage is significantly harder than in print books.

“Browsing a book is a way for readers to get an overview of content or to perform rudimentary searches,” Browne and Coe point out. “In a [print book] browsing means flipping through the pages and briefly reading parts of the text. Browsing one page at a time using most ebook reading devices is easy by simply pressing page forward or page back buttons or using a touch screen to move between pages, but it is more difficult to quickly skim a large range of pages.”<sup>90</sup>

One seemingly obvious browsing improvement is a simple back button, allowing users to follow a hyperlink or move to another location and then quickly return to where they left off.<sup>91</sup>

Amazon has recently introduced a feature for Kindle, Page Flip, that attempts to improve the usability of browsing. It allows users to scan quickly through page-accurate thumbnails of the surrounding pages and then return to the page they were previously on.<sup>92</sup>

## Index

When it comes to converting print books to digital formats with reflowable text, publishers seem not to know what to do with the index.<sup>93</sup> Page numbering is one of the most significant variations between print and ebooks, and the index is one of the places where that becomes most inconvenient. If a converted print book provides an index with the print page numbers, or no page numbers at all, it is not useful as a navigation tool.<sup>94</sup>

An index is designed only as a list of suggested search terms, and that use is not necessarily beneficial.<sup>95</sup> Browne and Coe point out, “The provision of the index as a whole, and the gathering of

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89 Pei Fen Chong, Yan Peng Lim & Siew Woei Ling (2009) On the Design Preferences for Ebooks, IETE Technical Review, 26:3, 213-222

90 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 290.

91 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 291.

92 <http://www.geekwire.com/2016/amazon-new-page-flip-navigation-tool-kindle/>

93 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 292.

94 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 288.

95 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 293.

broad and narrow concepts and related terms within the index, is one thing that sets it apart from an unfiltered list of search results.”<sup>96</sup>

They foresee improvement in indexes for ebooks, though, both in catching up with print books and using the technological capability of the medium to surpass print:

“There are two areas in which ebook indexes will develop. The first is simply the provision of better hardware and software to enable the implementation of basic index functionality ... along with the use of links from the index to the relevant part of the text. The second is the extension of the concept of the index, to offer functionality that doesn’t currently exist with print indexes.”<sup>97</sup>

## Annotation

Another way users could always interact with print books is through writing. Marginalia, highlighting, underlining, annotating, note-taking, and even doodling are an important feature of the reading experience that needs to be preserved in the electronic format.

Annotating a print book is effortless, requiring no additional skill. The usability threshold of a pen and a blank bit of space to write on is almost nonexistent. On the other hand, e-readers must incorporate annotation into the user interface and readers must learn how to use the features and remember how to find them, and then relearn these skills if they move to a different device.<sup>98</sup>

Readers also have a lot more flexibility with a print book in how they implement their annotations, compared to using whatever built-in functionality is offered by a device. Sometimes the tools are inadequate and the reader is forced to a third-party application instead. One participant in John Richardson and Khalid Mahmood’s study related:

“I can take notes on my reader, but the annotation function is poor. I had to download a third-party application to be able to take better notes. I also wish I could take notes on the margins in text boxes. The iPad lets you drop a pin on the text and then pops up a little sticky note that disappears after you’ve finished the note. I’d rather have the option to take notes on the side because that’s how I take notes on printed articles.”<sup>99</sup>

96 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 292.

97 Browne, Glenda, and Mary Coe. 2012. “Ebook navigation: browse, search and index.” *The Australian Library Journal*, 61:4 288-297. Page 294.

98 Merga, Margaret K. 2015. “Do Adolescents Prefer Electronic Books to Paper Books?” *Publications* 3, no. 4 237-247. Page 238.

99 Richardson Jr, John V., and Khalid Mahmood. 2012. “eBook readers: user satisfaction and usability issues.” *Library Hi Tech* (Library Hi Tech) 30 (1): 170-185. Page 180.

## Accessibility

For some readers, the traditional book presents challenges that the ebook has the potential to solve. Readers with so-called print disabilities—“visual, learning, or physical disabilities that make it impossible or overwhelmingly difficult for an individual to read from a physical book”<sup>100</sup>—can benefit from text-to-speech, resizing fonts, color contrast, and other features that e-readers and tablets offer.<sup>101</sup>

In addition to built-in technologies to help users, it’s important for e-readers to have the ability to integrate with assistive technologies. Screen readers and screen magnifiers can improve usability for those with print disabilities.<sup>102</sup>

Common usability issues, such as not being able to move to a specific page in an ebook, can be amplified for users with accessibility concerns, and unfortunately, the functionality to assist disabled users isn’t as common as it could be. Christina Mune and Ann Agee point out, “Only 56% (9 out of 16) allowed users to move to a specific page within the ebook. For users, especially those relying on screen readers, having to click or scroll forward or backward for hundreds of pages can be frustrating.”<sup>103</sup>

Even so, the accessibility features offered have led to an atypical group of early adopters for e-reading devices. Patricia Schroeder, Association of American Publishers president and CEO, said, “So far, the Kindle has been very well received by older people because the print can be made larger and it is so easy to use. That was a surprise, because we thought young people would be the first adopters.”<sup>104</sup>

## Ebook library

As the reader begins to amass a larger and larger collection of ebooks, navigating the library will become increasingly important.

100 Mune, Christina, and Ann Agee. 2015. “Ebook Showdown: Evaluating Academic Ebook Platforms from a User Perspective.” *Creating Sustainable Community: The Proceedings of the ACRL 2015 Conference*. Portland, Oregon. 218-224. Page 219.

101 MacWilliam, Angus. 2013. “The engaged reader.” *Publishing research quarterly* 29, no. 1 1-11. Page 7.

102 Mune, Christina, and Ann Agee. 2015. “Ebook Showdown: Evaluating Academic Ebook Platforms from a User Perspective.” *Creating Sustainable Community: The Proceedings of the ACRL 2015 Conference*. Portland, Oregon. 218-224. Page 219.

103 Mune, Christina, and Ann Agee. 2015. “Ebook Showdown: Evaluating Academic Ebook Platforms from a User Perspective.” *Creating Sustainable Community: The Proceedings of the ACRL 2015 Conference*. Portland, Oregon. 218-224. Pages 221-222.

104 Quoted in Herther, Nancy K. 2008. “The ebook reader is not the future of ebooks.” *Searcher: The Magazine for Database Professionals*, September: 26-40. Page 34.

Nicholas Vanderschantz, Claire Timpany, and Annika Hinze conducted a study analyzing users' preferences for these interfaces in their personal digital libraries (pDL) and a bookstore setting.<sup>105</sup> They found that users had different requirements for each.

They observed that most popular ebook libraries rely on the book metaphor for presentation, organizing books on virtual “shelves,” while deviating from the metaphor to display the books with the covers, rather than the spines, facing out.<sup>106</sup>

For the study, they presented users with five prototype interfaces:

- A showed book covers in a non-bookshelf layout.
- B showed spines in a literal bookshelf analogy.
- C showed book descriptions only in a grid layout.
- D showed the book covers and descriptions on a shelf layout.
- E showed images of the front, back, and spine of each book.

For ease of understanding, Prototype D was most popular. They appreciated having the description available, and “preferred the visual presentation of the book’s physical form to help with recognition.”<sup>107114</sup> Prototype D was also preferred for finding books, and Vanderschantz, et al, found that “participants are more likely to associate books with their covers than titles.”<sup>108</sup>

Overall, the study found that the description was the most important part for users when browsing, with cover, title, author, the back of the book, genre, reviews, and price also coming up during interviews.<sup>109</sup>

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105 Vanderschantz, Nicholas, Claire Timpany, and Annika Hinze. 2015. “Design exploration of eBook interfaces for personal digital libraries on tablet devices.” *Proceedings of the 15th New Zealand Conference on Human-Computer Interaction*. Hamilton, New Zealand: ACM. 21-30.

106 Vanderschantz, Nicholas, Claire Timpany, and Annika Hinze. 2015. “Design exploration of eBook interfaces for personal digital libraries on tablet devices.” *Proceedings of the 15th New Zealand Conference on Human-Computer Interaction*. Hamilton, New Zealand: ACM. 21-30. Pages 22-23.

107 Vanderschantz, Nicholas, Claire Timpany, and Annika Hinze. 2015. “Design exploration of eBook interfaces for personal digital libraries on tablet devices.” *Proceedings of the 15th New Zealand Conference on Human-Computer Interaction*. Hamilton, New Zealand: ACM. 21-30. Page 24.

108 Vanderschantz, Nicholas, Claire Timpany, and Annika Hinze. 2015. “Design exploration of eBook interfaces for personal digital libraries on tablet devices.” *Proceedings of the 15th New Zealand Conference on Human-Computer Interaction*. Hamilton, New Zealand: ACM. 21-30. Page 25.

109 Vanderschantz, Nicholas, Claire Timpany, and Annika Hinze. 2015. “Design exploration of eBook interfaces for personal digital libraries on tablet devices.” *Proceedings of the 15th New Zealand Conference on Human-Computer Interaction*. Hamilton, New Zealand: ACM. 21-30. Page 27.



# Children and ebooks

Children are being exposed to a greater number of ebooks, with their easy accessibility and popularity, than adults, particularly in school. According to Janel Chandler, “More than half of U.S. children are reading on electronic books.”<sup>110</sup>

Children’s books come seemingly ready for media enhancements, from narrations and interactive animations for young children to hyperlinks and hypermedia for older readers.<sup>111</sup> While these books explore more of the potential of the digital medium, they often still employ elements of the print book metaphor over interactive elements.

Most of the research on children and ebooks involves comprehension and reading skills,<sup>112</sup> while some covers usability and enjoyment.

## Comprehension

The jury is still out on whether ebooks aid or detract from comprehension. Some studies have recorded higher scores on comprehension tests and benefits to comprehension from features such as narration and animations. Others found that subjects recalled fewer details of the enhanced ebooks, and print books were better for learning story content.<sup>113</sup>

One major usability issue is that features such as animation may be distracting to young readers.<sup>114</sup> One study found that some subjects didn’t activate all the available interactive features, and those children understood the story better.<sup>115</sup> While increasing motivation, these elements “may also promote a ‘play-mode’ rather than stimulate children to read the entire story.”<sup>116</sup>

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110 Chandler, Janel. 2015. “The Electronic Book as a Disruptive Technology.” In *History of the Book: Disrupting Society from Tablet to Tablet*, 145-151. CC BY-NC. Page 149.

111 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 459.

112 Colombo, Luca, and Monica Landoni. 2011. “Towards an engaging e-reading experience.” *Proceedings of the 4th ACM workshop on Online books, complementary social media and crowdsourcing*. Glasgow, Scotland: ACM. 61-66. Page 62.

113 Longa, Nicol Dalla, and Ornella Mich. 2013. “Do Animations in Enhanced eBooks for Children Favour.” *Proceedings of the 12th International Conference on Interaction Design and Children*. New York: ACM. 621-624. Pages 621-22.

114 Lamb, Annette. 2011. “Reading Redefined for a Transmedia Universe.” *Learning & Leading with Technology* 12-17. Page 17.

115 Longa, Nicol Dalla, and Ornella Mich. 2013. “Do Animations in Enhanced eBooks for Children Favour.” *Proceedings of the 12th International Conference on Interaction Design and Children*. New York: ACM. 621-624. Page 623.

116 Smeets (2012) Quoted in: Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 462.

## Enjoyment

Whether enjoying ebooks as a game or a story, it seems clear that children enjoy them, and interactive features have a positive impact on their experience.<sup>117</sup> Children who are reluctant to engage in reading may be enticed to the activity<sup>118</sup> by the resemblance these books have to other storytelling forms, combining oral, print, and television traditions into a rich experience.<sup>119</sup>

According to Luca Colombo and Monica Landoni, the most popular feature of their enhanced ebook was read-aloud narration.<sup>120</sup> Children who are still developing reading skills may have a greater appreciation for the meaning of the story when they do not have to focus on the pronunciation of words, especially when there are also animations and sound effects to support the text.<sup>121</sup> Integrating the visual and the audio may lead to a richer and more engaging experience, according to Colombo and Landoni.<sup>122</sup>

There is not yet enough research to say unequivocally that adolescents prefer ebooks to print.<sup>123</sup> Several studies show that children do enjoy ebooks, especially those with multimedia enhancements,<sup>124</sup> but they also identify some of the drawbacks. Colombo and Landoni note:

“They reported on the following limitations: the book is no longer a tangible object with its various dimensions (weight, thickness, font size, even the ‘scent’) and eBooks (at present) do not have the same richness in illustrations and possibilities offered by some print books.”<sup>125</sup>

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117 Landoni, Monica, and Luca Colombo. 2014. “A Diary Study of Children’s User Experience with EBooks Using Flow Theory as Framework.” *Proceedings of the 2014 conference on Interaction design and children*. Aarhus: ACM. 135-144. Page 135, 143.af

118 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Page 457.

119 Sargeant, Betty. 2015. “What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books.” *Children’s Literature in Education* 46, no. 4 454-466. Pages 456-7.

120 Landoni, Monica, and Luca Colombo. 2014. “A Diary Study of Children’s User Experience with EBooks Using Flow Theory as Framework.” *Proceedings of the 2014 conference on Interaction design and children*. Aarhus: ACM. 135-144. Page 141.

121 Longa, Nicol Dalla, and Ornella Mich. 2013. “Do Animations in Enhanced eBooks for Children Favour.” *Proceedings of the 12th International Conference on Interaction Design and Children*. New York: ACM. 621-624. Page 621.

122 Landoni, Monica, and Luca Colombo. 2014. “A Diary Study of Children’s User Experience with EBooks Using Flow Theory as Framework.” *Proceedings of the 2014 conference on Interaction design and children*. Aarhus: ACM. 135-144. Page 142.

123 Merga, Margaret K. 2015. “Do Adolescents Prefer Electronic Books to Paper Books?” *Publications* 3, no. 4 237-247. Page 243.

124 Landoni, Monica, and Luca Colombo. 2014. “A Diary Study of Children’s User Experience with EBooks Using Flow Theory as Framework.” *Proceedings of the 2014 conference on Interaction design and children*. Aarhus: ACM. 135-144. Page 135.

125 Colombo, Luca, and Monica Landoni. 2011. “Towards an engaging e-reading experience.” *Proceedings of the 4th ACM workshop on Online books, complementary social media and crowdsourcing*. Glasgow, Scotland: ACM. 61-66. Page 63.

# CHAPTER FIVE

## *Ebook distribution*

### The ebook market

The ebook market and its share of the overall book market tend to fall short of expectations. As of 2008, despite the technological improvements, ebooks were still only 3% of the book-publishing business. In 2011, the US ebook market was \$90.3 million, according to Hui Li.<sup>126</sup>

By 2015, the forecast for ebooks was looking brighter, with predictions of ebook sales outstripping print book revenue by 2018, as reported by Mihye Kim:

“Major online booksellers and publishers, as well as portals and communication companies, are leading the growth of the e-book market. Currently the ratio of e-books among new published books is 30% in the United States publishing market [4]. PricewaterhouseCoopers (PwC) expects that the sales revenue from e-books will surpass that from printed books in 2018, reaching a total of US\$8.69 billion, up from \$2.31 billion in 2011 [5].<sup>127</sup>

Most ebook sales go through just five major retailers, according to AuthorEarnings.com. Amazon’s Kindle Store gets about 65% of traditionally published ebook sales, going up to about 74% if you include indie published titles.<sup>128</sup> After that, Apple’s iBooks store makes up 10-12% of sales. The remaining bit players are the Barnes & Noble Nook Store, at about 7%, the Kobo Book Store, about 4%, and finally the Google Play Book Store at just around 2%.<sup>129</sup>

Theories for why the ebook market has faltered for so long are widespread. Nancy Herther points out that people think of things online as public domain and therefore aren’t willing to pay for them.

A related issue is pricing, which is in line with print books despite the limitations placed on use by DRM (see DMCA). Herther points out, “Since ebooks cannot be shared, moved to another platform, etc., the value and pricing — in comparison to existing print pricing — needs reassessment.”<sup>130</sup>

126 Chandler, Janel. 2015. “The Electronic Book as a Disruptive Technology.” In *History of the Book: Disrupting Society from Tablet to Tablet*, 145-151. CC BY-NC. Page 145.

127 Kim, Mihye. 2015. “Analysis of User Preferences for Management and Search Features in E-book Reader Libraries in Smart-phone Environments.” *International Journal of Contents* 11, no. 4 44-55. Page 44.

128 <http://authorearnings.com/report/october-2015-apple-bn-kobo-and-google-a-look-at-the-rest-of-the-ebook-market/>

129 <http://authorearnings.com/report/october-2015-apple-bn-kobo-and-google-a-look-at-the-rest-of-the-ebook-market/>

130 Herther, Nancy K. 2008. “The ebook reader is not the future of ebooks.” *Searcher: The Magazine for Database Professionals*, September: 26-40. Page 38.

She even posits that the books offered may simply not be transformational enough to draw users away from the print versions they've always purchased.<sup>131</sup>

David Staley thinks readers just enjoy the physical properties and paper books will survive “because of their materiality, not in spite of it.”<sup>132</sup> The book metaphor may not hold a candle to the real thing.

## Libraries

Lending ebooks is “a natural progression of the ebook technology evolution,” but that doesn't mean the road has been smooth for libraries or publishers.<sup>133</sup> While more popular in some disciplines than others,<sup>134</sup> overall, borrowing ebooks is increasing in popularity.<sup>135</sup>

## Benefits and drawbacks

The benefits of lending ebooks relate especially to the ephemeral state of the files. You can loan out numerous copies simultaneously; they don't show signs of wear; they don't take up shelf space<sup>136</sup> In most cases, you can download a book directly to your device without setting foot in the library, and the loan automatically disappears when the period has ended—so no more pesky late fees. Libraries can acquire titles when a patron requests them, rather than stockpiling materials.<sup>137</sup>

However, there are concerns for libraries when it comes to electronic lending. Privacy is one issue—Amazon knows what its Kindle users have on their devices even when it's borrowed from a library and the record is purged.<sup>138</sup> There are also new issues related to copyright, considering loaning

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131 Herther, Nancy K. 2008. "The ebook reader is not the future of ebooks." *Searcher: The Magazine for Database Professionals*, September: 26-40. Page 35.

132 Staley, David J. "The future of the book in a digital age." *The Futurist*, Sept.-Oct. 2003, p. 18+. Academic OneFile, libraryproxy.quinnipiac.edu/login?url=http://go.galegroup.com/ps/i.do?p=AONE&sw=w&u=a13qu&v=2.1&id=GALE%-7CA107526043&it=r&asid=2b07c8600cd677e1948f6663d848e6fb. Accessed 30 Oct. 2016.

133 Laura Manley & Robert P. Holley (2012) *History of the Ebook: The Changing Face of Books*, Technical Services Quarterly, 29:4, 292-311, Page 308.

134 McKay, Dana, and George Buchanan. 2016. "You Can Check It Out But It Will Never Leave: Characterising Borrowing Patterns." *Proceedings of the 2016 ACM on Conference on Human Information Interaction and Retrieval*. Chapel Hill, North Carolina: ACM. 203-212. Page 205.

135 McKay, Dana, and George Buchanan. 2016. "You Can Check It Out But It Will Never Leave: Characterising Borrowing Patterns." *Proceedings of the 2016 ACM on Conference on Human Information Interaction and Retrieval*. Chapel Hill, North Carolina: ACM. 203-212.

136 McKay, Dana, and George Buchanan. 2016. "You Can Check It Out But It Will Never Leave: Characterising Borrowing Patterns." *Proceedings of the 2016 ACM on Conference on Human Information Interaction and Retrieval*. Chapel Hill, North Carolina: ACM. 203-212.

137 Laura Manley & Robert P. Holley (2012) *History of the Ebook: The Changing Face of Books*, Technical Services Quarterly, 29:4, 292-311, Pages 301-302.

138 Laura Manley & Robert P. Holley (2012) *History of the Ebook: The Changing Face of Books*, Technical Services Quarterly,

a book now involves copying and transmitting it, practices often restricted in the license.

Even with these considerations, the ease of use of e-lending brings it closer to being a “perfect substitute” for purchasing a book, and therefore a real threat to book publishers.<sup>139</sup>

## **Libraries versus publishers**

At the Digital Book World conference in 2011, Brian Napack, Macmillan US president, said of looking for a business model that includes libraries, “The fear is I get one library card and never have to buy a book again.”<sup>140</sup>

For print books, enough copies must be purchased to meet demand, and eventually those copies wear out and have to be replaced. Or they could sell those copies to the public when the book becomes less popular. A library could theoretically buy one copy of an ebook and lend it out over and over again indefinitely, so publishers are concerned about reduced revenue and hesitate to license their ebook content to libraries.<sup>141</sup>

While some publishers have chosen not to license their content to libraries at all, others impose restrictions, like buying a certain number, rebuying after lending it out a certain number of times, buying copies as part of a bundle, and buying them at a higher price than consumers.<sup>142</sup>

Ebooks allow libraries to better fulfill their purpose and serve the public interest, while publishers have at the heart of their business model serving stockholders and stakeholders. It’s unclear whether a market solution to this difficulty exists. Rebecca Giblin and Kimberlee G. Weatherall describe it thusly:

“...libraries are so important to society — because they exist to fulfil the broader public interest in access to knowledge and culture, including by correcting distributional inequity and ministering to people the market would otherwise leave under-served. By contrast, members of the commercial book supply chain are rationally driven by private interests, particularly maximizing their profits.”<sup>143</sup>

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29:4, 292-311, DOI: 10.1080/07317131.2012.705731. Page 308.

139 Giblin, Rebecca, and Kimberlee G. Weatherall. August 2015. “At the Intersection of Public Service and the Market: Libraries and the Future of Lending.” *Australian Intellectual Property Journal* 4-26. Page 20.

140 <http://www.thebookseller.com/news/library-e-book-lending-works-all-dbw-told>

141 Laura Manley & Robert P. Holley (2012) History of the Ebook: The Changing Face of Books, *Technical Services Quarterly*, 29:4, 292-311, DOI: 10.1080/07317131.2012.705731. Page 306.

142 Giblin, Rebecca, and Kimberlee G. Weatherall. August 2015. “At the Intersection of Public Service and the Market: Libraries and the Future of Lending.” *Australian Intellectual Property Journal* 4-26. Page 22.

143 Giblin, Rebecca, and Kimberlee G. Weatherall. August 2015. “At the Intersection of Public Service and the Market: Libraries and the Future of Lending.” *Australian Intellectual Property Journal* 4-26. Page 23.

# The DMCA

It's impossible to discuss the ebook market without turning to the issue of the Digital Millennium Copyright Act (DMCA). To address issues that arose with the advent of the internet, in 1998 the US Congress made major changes to copyright law with this act.<sup>144</sup>

This law gave more control to copyright holders, enabling them to attach digital rights management (DRM) to ebook files to limit their use and prevent copying or transmission.<sup>145</sup>

It led to Amazon and Apple, among others, creating proprietary formats and preventing reselling of ebooks through the doctrine of first sale. Laura Manley and Robert Holley explain:

“The strengthening of copyright protection through the DMCA was especially important for ebooks and ebook readers because most DRM controls either prohibit or limit copying and often do not allow the ebook to be transferred to a new device when coupled with a restrictive licensing agreement.”<sup>146</sup>

The doctrine of first sale states that someone who buys a trademarked product may “sell or dispose of” it however they see fit.<sup>147</sup> With DMCA, it's easy for the copyright holder to circumvent that rule. A licensed ebook may come with digital rights management technology, which is intended to prevent unauthorized sharing but also makes it more frustrating for legitimate users.<sup>148</sup>

The DMCA is one of the issues standing in the way of universal, platform-independent ebooks.<sup>149</sup>

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144 Laura Manley & Robert P. Holley (2012) History of the Ebook: The Changing Face of Books, *Technical Services Quarterly*, 29:4, 292-311, DOI: 10.1080/07317131.2012.705731. Page 300.

145 Giblin, Rebecca, and Kimberlee G. Weatherall. August 2015. "At the Intersection of Public Service and the Market: Libraries and the Future of Lending." *Australian Intellectual Property Journal* 4-26. Page 15.

146 Laura Manley & Robert P. Holley (2012) History of the Ebook: The Changing Face of Books, *Technical Services Quarterly*, 29:4, 292-311, DOI: 10.1080/07317131.2012.705731. Page 300.

147 <http://www.aallnet.org/Documents/Government-Relations/Copyright-2/FirstSaleDoctrine.html>

148 Merga, Margaret K. 2015. "Do Adolescents Prefer Electronic Books to Paper Books?" *Publications* 3, no. 4 237-247. Page 238.

149 Herther, Nancy K. 2008. "The ebook reader is not the future of ebooks." *Searcher: The Magazine for Database Professionals*, September: 26-40. Page 37.



# CHAPTER SIX

## *Ebook heuristics*

Some efforts have been made to create standards for ebooks. These are two.

### Electronic Book ON-screen Interface (EBONI) Project

In 2002, the Electronic Book ON-screen Interface Project, EBONI, published a set of 22 guidelines for electronic books.<sup>150</sup> As stated in their report, their aims were to:

- Evaluate the different approaches to the design of electronic textbooks, and to identify which styles and features are most successful in enabling users to retrieve, quickly and easily, the information they require.
- Identify and report on the individual requirements of students and academics from different disciplines and backgrounds in learning and teaching using electronic textbooks.
- Compile and promote a set of best practice guidelines for the publication of electronic textbooks, reflecting the usability requirements of the UK HE [Higher Education] community.<sup>151</sup>

While the examples of books are all from computers, the guidelines offer heuristics for both ebooks and ebook devices. Most of these guidelines are still at least somewhat applicable to current ebooks and ereading devices.

#### **Guideline 1: Cover your book**

While it lacks “practical value,” according to EBONI, a cover can add to the user experience of the reader, “reinforcing the user’s perception that he is reading a unique set of pages which form a cohesive unit, and providing a point of recognition on return visits to the book.” The practical value of a book cover now is in recognizing it among the titles in your library, and a powerful marketing tool.

#### **Guideline 2: Include a table of contents**

As opposed to covers, tables of contents are essential to electronic books, allowing readers to skim the contents, providing them with a sense of structure, and offering an important navigation tool.

#### **Guideline 3: Include an index**

<sup>150</sup> Wilson, Ruth, and Monica Landoni. 2002. EBONI: Electronic textbook design guidelines. Strathclyde: JISC.

<sup>151</sup> Wilson, Ruth. The “look and feel” of an ebook: considerations in interface design. 17th ACM Symposium on Applied Computing (SAC 2002). Universidad Carlos III de Madrid, Spain, March 10-14, 2002.

With hyperlinks, indexes can also be an important navigation tool, and they should be prominent, not in the back of the book.

#### **Guideline 4: Provide a search tool**

The browsing tools of tables of contents and indexes should be supplemented by an alternative way to find information.

#### **Guideline 5: Treat the book as a closed environment**

EBONI suggests that books are an environment unto themselves, “containing no links to external sources unless clearly labeled (for example in a reference section or bibliography).”

The ability to link an ebook to a wider context is a major benefit of the medium. Clearly labeled is a point well taken, however.

#### **Guideline 6: Use hypertext to enhance navigation and facilitate cross-referencing**

EBONI considers cross-referencing an important part of print books, strongly valued by readers. Hyperlinks, along with “a strong structure and a clear and simple navigation system” can facilitate adapting this practice to the electronic medium.

#### **Guideline 7: Design typographical aspects carefully**

Ways to design an ebook “to enhance readability” include plenty of white space, line lengths of 10-15 words, and left-justified text, as well as accessibility considerations such as using markup and style sheets.

#### **Guideline 8: Use short pages**

EBONI states that long pages that require scrolling can be frustrating, while pages that are too short and require lots of “turning” are annoying and readers can become lost. It recommends using the paper page as a model.

#### **Guideline 9: Provide content clues**

Putting “abstracts, keywords or tables of contents” at the top of the page can help readers determine whether the content on the page is relevant at a glance.

The usefulness of this guideline would depend entirely on the length of the page in question, but it seems superfluous. An ebook should follow the same standards as a print book in this regard, it seems.

#### **Guideline 10: Provide orientation clues**

EBONI advocates that progress indicators should be “accurate and visible,” to make up for the “sense of place” in a print book achieved through page numbers and the relative weight and thickness of pages read versus pages left.

#### **Guideline 11: Choose a readable font**

The font of the ebook should be large enough to comfortably read for a long time or, preferably, readers should be able to choose their own font size and style.

#### **Guideline 12: Use color to create a consistent style and aid scannability**

While “Careful use of a few colors” can enhance the user’s experience, too many colors can be distracting. EBONI also cautions against plain white backgrounds.

#### **Guideline 13: Break text into short chunks**

EBONI’s recommendations for improving the scannability of text include “interspersing text with images and diagrams and keeping paragraphs short, and by using meaningful sub-headings, indented, bulleted lists, and color to break the uniformity of the text.”

#### **Guideline 14: Use non-text items with care**

According to EBONI, “Readers expect images, diagrams and formulae to be included and to look as visually sophisticated as they do on the printed page.” Pictures should be in color, if possible, graphic elements should be interspersed with text, and larger versions should be available to view separately.

#### **Guideline 15: Use multimedia and interactive elements to engage users**

EBONI encourages taking advantage of the potential for interaction the electronic medium provides, with the caveat that it can make text harder to scan and should always be used to enhance, not replace, text.

#### **Guideline 16: Provide bookmarking, highlighting and annotating functions**

Ebook software should allow users to bookmark, highlight, and annotate text. These functions “should be as powerful, straightforward and quick to use as possible.”

#### **Guideline 17: Enable customization**

Font style and appearance should conform to best practices by default, but be adjustable based on the user’s preference and that preference saved for later use.

#### **Guideline 18: Employ high quality display technology**

With this guideline, the focus turns to ereading hardware. High-quality display features include high resolution and high contrast, with backlighting and a color screen.

#### **Guideline 19: Balance lightness and portability against legibility**

There is a tradeoff between making a device lightweight and portable enough for ease of use and the amount of text that can fit on a screen and making sure page-turning is not too frequent.

#### **Guideline 20: Design devices for comfort**

Devices should be light enough to hold in one hand, and requiring a stylus is not desirable.

#### **Guideline 21: Use buttons and dials to improve page turning**

EBONI prefers buttons or dials to facilitate page-turning, and specifies that they should be large and intuitive to use.

Despite the addition of touch screens to devices, some e-readers still seem to favor tactile page-turning mechanisms.

#### **Guideline 22: Make devices robust**

Device functionality should be made robust enough to last a long time, but this guideline refers to ensuring the physical durability of the device by adding hard covers and rubber bumpers.

## International Digital Publishing Forum (IDPF)

EPUB 3 is the current open source standard set forth by the International Digital Publishing Forum (IDPF). EPUB 3.0.1 was recommended in October 2011,<sup>152</sup> and EPUB 3.1 is currently a Proposed Specification.<sup>153</sup>

This current version of EPUB brings HTML5 and CSS3 into the standard, offering multimedia features to enable the creation of enhanced ebooks:<sup>154</sup>

### 1 Package Document

Each EPUB publication, referred to as a “rendition,” comes with a “package document” that details everything required to render it.

### 2 Navigation

#### 2.1 Reading Order

An EPUB publication is considered to have a default order or logical progression through the book, although there is no mandate that it be read in that order. This informs the spine of the book, as well as the table of contents.

#### 2.2 Navigation Document

A publication comes with an EPUB Navigation Document, which uses the HTML5 “nav” element to provide navigation information for humans and machines.

### 3 Linking

The new standardized, interoperable linking mechanism in EPUB 3 can enable reading and book-marking across devices.

### 4 Metadata

EPUB publications include a dedicated metadata section in the Package Document, making accessible title, author, and other information about the publication.

### 5 Content Documents

An EPUB publication includes at least one XHTML or SVG EPUB Content Document, which describes readable content and references media resources.

### 6 Fixed Layouts

<sup>152</sup> <http://idpf.org/epub/301>

<sup>153</sup> <http://idpf.org/news/epub-31-now-proposed-specification>

<sup>154</sup> <http://epubzone.org/epub-3-overview/understanding-epub-3>

EPUB has historically favored reflowable content, but because not all content forms are conducive to such a layout, EPUB 3 includes fixed-layout creation capabilities for both XHTML and SVG.

## **7 Rendering and CSS**

According to the IDPF, “A key concept of EPUB is that content presentation adapts to the User, rather than the User having to adapt to a particular presentation of content.” It isn’t guaranteed for non-reflowable content, but “supporting dynamic adaptive layout and accessibility has been a primary design consideration” in all versions of the EPUB standard.

## **8 Multimedia**

EPUB 3 uses the HTML5 audio and video elements to support embedded audio and video.

## **9 Fonts**

Because word-processing programs are likely to only have OpenType fonts and web-archival EPUB generators often only have WOFF, EPUB 3 supports both resources in obfuscated and regular formats.

## **10 Scripting**

Although “EPUB strives to treat content declaratively — as data that can be manipulated, not programs to be executed” and support for it is optional and may be disabled, EPUB 3 supports scripting as defined in HTML5 and SVG.

## **11 Text-to-speech**

EPUB 3 offers pronunciation lexicons, inline Speech Synthesis Markup Language (SSML) phonemes, and CSS speech features to control aspects of speech synthesis for text-to-speech functionality.

## **12 Container**

The single file in which an EPUB publication is transported and interchanged is based on the popular ZIP format and includes the Package Documents, Content Documents, and all required resources, as well as an XML document in a predetermined location to identify the location of the rest.

# CHAPTER SEVEN

## *Exemplars*

### Adult fiction

#### ***Midnight Rises*, by John Scalzi (Midnight Star companion)**

Read on: iOS app

Midnight Rises is a graphic novel, a companion piece to the Midnight Star first-person shooter app. The legacy medium is clearly noticeable in the page layout and illustration style, but animations and interactive elements are fully incorporated.

Midnight Rises primarily employs animation as transition, leaving a stable image for the user to read with. There are many transitions, though, making the animation feel like a primary feature.

It employs the book metaphor in its page turns, the reader taps on the right side of the screen to advance and the left to go back. Some “spreads” are larger than the screen, and panning provides additional interactivity as well as a sense of depth.

The primary form of interactivity is in choosing which order you want to follow to access content. The protagonist can visit characters in the order you choose, and you can select among the articles in the president’s briefing report. Every so often, you can choose between plotlines, such as whether to pursue a romance storyline.

The gamification in Midnight Rises is an Easter egg hunt. Clicking on the icon where it appears in the illustrations leads to additional information about some aspect of the story or world. You also earn a badge that acts as a tie-in to the video game.

#### ***A Game of Thrones Enhanced Edition*, by George R.R. Martin**

Read on: iBooks iOS app

*A Song of Ice and Fire* is a sprawling labyrinth of a fantasy series, and the Enhanced Edition is a true exemplar of the way extra-narrative content can augment a reader’s experience.

The text is illuminated with character descriptions (complete with house crest illustrations),

designated by boldface text, which link to a glossary index with related terms and hyperlinks to different places in the text.

There are additional notes in the text indicated by a small crown icon next to a word. “This is obviously Garad. It’s worth considering that his location here, near Winterfell, means that at least a month—and perhaps two months—has passed between chapters,” reads an annotation in chapter 1.

Maps of the Seven Kingdoms appear at the beginning of each chapter, demarking the location of characters and tracing their journeys. Maps can be enlarged, zoomed, and panned.

Performing a pinch icon brings up the cover art on the top part of the screen and the table of contents on the bottom. You can choose to resume or navigate to a different part of the book.

An icon at the top left brings you to your notes, organized by chapter, and a “Study Cards” feature that turns the glossary terms and/or your notes and highlights into a set of virtual flashcards.

## Adult nonfiction

### ***How to Think Like a Computer Scientist: Interactive Edition***

Read on: <http://interactivepython.org/courselib/static/thinkcspy/index.html>

How to Think Like a Computer Scientist is an interactive textbook that incorporates videos and interactive code blocks to make the learning process more interactive. In “Beyond PDF and ePub: toward an interactive textbook,” Bradley Miller and David L. Ranum discuss the development process behind the book. To enhance the experience of learning Python code, they added three interactive features.

“These features are as follows: 1) embedded video clips, 2) active code blocks that can be edited and run right in the book, 3) a code visualizer that allows a student to step forward and backward through example code while observing variables and program output.”<sup>155</sup>

Very little of the physical book metaphor is preserved, although the structure of the book is traditional. A table of contents and index provide the primary navigation, and content is organized into chapters. Each section is presented on a page, which are long enough to require scrolling.

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<sup>155</sup> Miller, Bradley N., and David L. Ranum. 2012. “Beyond PDF and ePub: toward an interactive textbook.” Proceedings of the 17th ACM annual conference on Innovation and technology in computer science education. Haifa, Israel: ACM. 150-155. Page 150.



Having videos and interactive exercises integrated into the content is extremely convenient. The added clarification of being able to see each stage of code as it executes is significant value added for computer science learning, and could easily be extended to other disciplines.

## **To This Day**

Read on: iOS app

To This Day is a spoken-word poem that was turned into an animated “reading” experience. To be sure, the words of the poem appear on the screen, and the app is organized in “pages” that are advanced by tapping on the right side of the screen; however, that is where the resemblance to reading ends. This app is better characterized as an interactive video with subtitles than a book.

Each section of text has a looping video that interprets the poem with musical accompaniment. The videos and music all have distinct styles, so the transitions between pages are somewhat jarring.

The text responds to the angle of the screen, and as it falls like it’s impacted by gravity the voice stops reading. This is more of an annoyance than a feature, as the narration stops when the text is disturbed. Because the text is so peripheral to the experience of the app, this gimmick could be improved by unlinking it from the narration.

The settings allow you to turn on and off the voiceover, the text display, automatic page-turning, and the annoying text interactivity. In addition, it allows you to record your own reading of the poem. You can read the text in French or Spanish, but the voiceover is only in English.

The poem is powerful and the presentation is engaging. Judged by a different standard, it is a worthwhile app. It simply proves that not everything can be considered a book, even with the flexible definition demanded by enhanced ebooks.

## Children’s books

### ***Sunborn Rising*, by Aaron Safronoff**

Read on: iOS app

Sunborn Rising is a young adult novel enhanced with music and animated illustrations. It has animated illustrations, activated by turning the device to landscape mode. Users can still see a static,

portrait version of the full-color illustration without looking at the animation.

The “6 hours of original music, paired to your reading speed and written specifically for this story,” offers a highly personalized interactive element. This user couldn’t identify any personalization during her trials.

The page metaphor is adhered to, with one view option a stylized look of worn parchment.

It, of course, has a tie-in game.

## **Reading Rainbow Skybrary**

Read on: iOS app

The Reading Rainbow Skybrary app was brought to you by a wave of ’80s nostalgia and a highly successful Kickstarter.<sup>156</sup> The home version offers a variety of books on subject-themed “islands”: Action Adventures & Magical Tales, Genius Academy, Awesome People, National Geographic Kids, Animal Kingdom, My Friends, My Family, and Music Mountain.

Kids can browse the books and videos on each island and select books to add to their backpack, five at a time. A “Book Return” slot in the backpack allows you to trade in books you’ve already read to free up slots for new ones.

Instructional videos and text-free icons show young users how to use the app and read a book. Books have interactive hot spots to animate the illustrations, a read-aloud option, and a memory game with illustrations from the book. At the end of the books are “Big Thinker Questions,” a card of comprehension questions about the story.

As the voice reads aloud, sections of the text are highlighted and enlarged. Animations are indicated by a looping star animated icon, which repeats after the animation is activated. This reader’s 4-year-old niece quickly learned there was no need to press the icon more than once.

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<sup>156</sup> <http://www.forbes.com/sites/amitchowdhry/2014/07/03/reading-rainbow-closes-kickstarter-crowdfunding-campaign-at-over-5-4-million/#1f6bbe062890>

# Conclusion

The book metaphor is an important part of easing the transition between print books and electronic books. A book can no longer be defined by its pages and spine, but those concepts provide useful guideposts to introduce readers to a new form of technology. As the technology improves, the form comes into its own, and adoption becomes more universal, some of the shorthand will fall away.

Ebooks have come a long way since their first conception as a desk-sized microfiche reader, and their early iterations as clunky devices with small screens and difficult-to-use interfaces. Will we continue to adopt multipurpose devices as e-readers, or will a fifth generation of dedicated e-readers corner the bookworm market?

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