Designing for Digital Reading

Synthesis Lectures on Information Concepts, Retrieval, and Services

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Designing for Digital Reading

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SYNTHESIS LECTURES ON INFORMATION CONCEPTS, RETRIEVAL, AND SERVICES #29

ABSTRACT

Reading is a complex human activity that has evolved, and co-evolved, with technology over thousands of years. Mass printing in the fifteenth century firmly established what we know as the modern book, with its physical format of covers and paper pages, and now-standard features such as page numbers, footnotes, and diagrams. Today, electronic documents are enabling paperless reading supported by eReading technologies such as Kindles and Nooks, yet a high proportion of users still opt to print on paper before reading. This persistent habit of 'printing to read' is one sign of the shortcomings of digital documents—although the popularity of eReaders is one sign of the shortcomings of paper. How do we get the best of both worlds?

The physical properties of paper (for example, it is light, thin, and flexible) contribute to the ease with which physical documents are manipulated; but these properties have a completely different set of affordances to their digital equivalents. Paper can be folded, ripped, or scribbled on almost subconsciously—activities that require significant cognitive attention in their digital form, if they are even possible. The nearly subliminal interaction that comes from years of learned behavior with paper has been described as *lightweight interaction*, which is achieved when a person actively reads an article in a way that is so easy and unselfconscious that they are not apt to remember their actions later.

Reading is now in a period of rapid change, and digital text is fast becoming the predominant mode of reading. As a society, we are merely at the start of the journey of designing truly effective tools for handling digital text.

This book investigates the advantages of paper, how the affordances of paper can be realized in digital form, and what forms best support lightweight interaction for active reading. To understand how to design for the future, we review the ways reading technology and reader behavior have both changed and remained constant over hundreds of years. We explore the reasoning behind reader behavior and introduce and evaluate several user interface designs that implement these lightweight properties familiar from our everyday use of paper.

We start by looking back, reviewing the development of reading technology and the progress of research on reading over many years. Drawing key concepts from this review, we move forward to develop and test methods for creating new and more effective interactions for supporting digital reading. Finally, we lay down a set of lightweight attributes which can be used as evidence-based guidelines to improve the usability of future digital reading technologies. By the end of this book, then, we hope you will be equipped to critique the present state of digital reading, and to better design and evaluate new interaction styles and technologies.

KEYWORDS

reading, active reading, documents, eReaders, annotation, bookmarking, note-taking, indexing, books, digital libraries

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Contents

Preface

Together, we have spent six years exploring how to make digital reading a better experience. We have each found frustration at using the current "state-of-the-art" technologies, and at the same time understood how this poor design was not necessary. Reading can be for fun, learning, or relaxation, but we all believe that the experience should be more about the text and the journey it takes the reader on, than fighting with poor quality print, a springing spine, or, more often, a difficult user interface.

Today, as electronic books are becoming evermore ingrained and implanted into our daily lives, we all find ourselves reading more frequently on screen. Whether it be to undertake active reading on a PC workstation or enjoy a novel on an eReader, the act of reading is shifting more and more toward the digital, making it an opportune time to investigate the on-screen reading process.

While investigating how to improve reading, we have implemented several lightweight active reading tools, and consequently evaluated them. We don't claim that our solutions are the best, last word. Indeed, we rather hope not. Many other researchers are also making substantial contributions to a valuable cause of improving what is, for many, an everyday activity. We have very much enjoyed our work, and been stimulated by others. Hopefully this book will also excite and inform you, and, perhaps, you too will be able to add your own ideas in the future to help us all make reading on digital devices the delight many have found reading to be in print.

Jennifer Pearson, George Buchanan, and Harold Thimbleby
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Thanks, everyone!

Jen George Hurst

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