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# eBooks and Memory: Down the Rabbit Hole?

by **Tony Horava** (Associate University Librarian – Collections, University of Ottawa) <thorava@uottawa>

*“Down, down, down. Would the fall never come to an end! ‘I wonder how many miles I’ve fallen by this time?’ she said aloud. ‘I must be getting somewhere near the centre of the earth.’” — Alice’s Adventures in Wonderland*

## Starting Point

Totally disoriented, **Alice** dropped a long way until she hit bottom. This article, however, begins squarely on the surface of the earth — with my reading of a column from **Bob Nardini** in the Dec. 2010-Jan. 2011 issue of *Against the Grain*. In his column, **Bob** muses upon experience involved in the reading of a book, *Simple Justice*, thirty years ago. Having described his personal circumstances, he concludes “If I had read *Simple Justice* that way [i.e., as an eBook], though, I can’t help wondering how much harder it would be, today, to remember anything at all.”<sup>1</sup> As we advance further into the challenges and surprises of the digital age, this is an issue that bears much exploration. **Bob’s** piece was a springboard for my thinking.

Libraries are cultural memory institutions — they were intended to preserve the accumulated heritage of the past, largely in print format, for the benefit of future generations in perpetuity. Stewardship of this cultural and scholarly legacy is a widely accepted core value of librarianship. While the “slow burning fires” of acid paper represent large swathes of our respective collections, thus putting them at risk, until recent times this was a logistical problem rather than an existential one. The critical importance of preservation, and the library’s central role in it, was never in doubt. Today, however, memory as an integral bridge between past, present, and future is in doubt, or at least requiring major re-definition. A societal emphasis on immediacy, speediness, connectedness, and multimedia saturation leads inevitably to a lessening of historical perspective on reality. Yes, there is a countervailing “slow” movement among various circles (think of *In Praise of Slowness* by **Carl Honoré**), but this will never become the mainstream lifestyle. Our brain train is perpetually in fast gear. We are acquiring, discovering, creating, sharing and repurposing information on a scale never known before, but our connection with the past is of a very different quality — and more tenuous than ever before. There is no small irony here, since librarians are specifically charged with the stewardship of our cultural and scholarly heritage that now exists in countless formats and on a massive scale and is as ephemeral as the latest software or platform.

**Nicholas Carr** draws a straight line between memory and thought: In today’s

world where we “...are inundated with more bits and pieces of information than ever before, everyone would benefit from having an understanding of cognitive load and how it influences memory and thinking. The more aware we are of how small and fragile our working memory is, the more we’ll be able to monitor and manage our cognitive load. We’ll become more adept at controlling the flow of the information coming at us.”<sup>2</sup> While information overload is a fact of our personal and professional lives — that all of us can attest to — the impact on memory is not as well known or understood.

## Reading Experience

eBooks, for all of their vaunted benefits — and there are many — create enormous challenges for memory development. All of us who are digital immigrants have vivid memories of reading printed books in our childhood, youth, or early adulthood. We can recall the color, the cover design, and the typographical look of the pages, and any creases, folds, or imperfections in the pages; we can sometimes recall the smell and the texture as well. Each book brought with it a unique experience that was intellectual, social, and emotional; the physicality of the artifact combined seamlessly with the mental richness of the world contained within the covers. These experiences have helped define who we are today, and it would be difficult to argue that we could be the same persons without these experiences that were vividly and indelibly imprinted in our brains and our hearts. I can vividly recall discovering the world of **Dostoyevsky** while curled up on a couch in my cousin’s country house in the Laurentian mountains in Quebec, with the fireplace crackling a few meters away. The thick paperback, its brown and black covers, and its dense pages are intimately twined with my memory of discovering the obsessive and half-mad characters within the pages, as they struggled for truth and salvation. Just as importantly, the experience is inextricably bound up with the rolling landscape, the deep wintery mantle of snow, Christmas holidays, skating and skiing, and the family members who were there. Hind-sight is 20/20 of course, but there is a quality of uniqueness and personal connection that I think would have been less compelling if I had been reading the Russian novelist on an eBook reader.

Reading fiction can trigger a whole host of reactions — anger, excitement, fear,

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hope, anxiety, compassion, joy and all the shades of emotion in-between. We learn from the characters’ predicaments; we absorb the dialogue and setting, and we are influenced by the rhythms, imagery, and themes of the narrative, whether personal, social, or political. While suspending our disbelief, we learn much about the world and about language, and living vicariously via books is a magical odyssey that all of us have taken. We grow in ways that are difficult to

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convey in words. These intimate journeys have produced a complex web of memories that we consciously or unconsciously carry throughout our lives and enrich our experience of language and cultural understanding, broadly understood. As we replay the memories to ourselves, or as we re-read books from years before, we amplify and overlay these memories in light of new knowledge and awareness. “As good almost kill a man as kill a good book,” to quote **John Milton**.

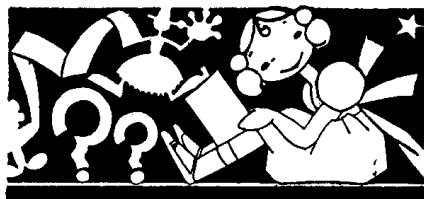
The advent of the eBook into the mainstream has led to a privileging of access and convenience over the richness of the individual reading experience and raises enormous questions about the dynamics of reading. How will eBooks change the ways we read, the ways we learn language, and how will this inform our imagination, our vocabulary, our writing, our thoughts, and self-understanding? There is a fundamental paradox — in some ways the eBook has led to a flattening of reading experience, an anonymizing of interaction with texts, while on the one hand, eBooks are being developed in a richer environment of functionality, portability, and integration than ever before. Interactivity is improving. However, there is no doubt that many problems remain, whether we want to consider licensing issues, usability, DRM, portability, or long-term preservation.

Will we continue to read books, especially works of fiction, from start to finish? (Oops, I almost said “cover to cover”) Maintaining sustained reading in a long-form work of fiction or non-fiction is fundamentally at odds with the slicing and dicing of knowledge into smaller and smaller components of information in the digital era. This is much more challenging for the school-age generation that is learning today to read and even more in doubt for the generations that will follow. Much ink — perhaps too much — has been spilled over the question of the future of the book. I am not one of those who prognosticate the end of the printed book, but a long-term diminishing of the scale of print reading is inevitable. Fifty years from now, what percentage of reading will be analog rather than digital? It will be a small percentage, for a narrow audience, in my view. Regardless of this speculation, the larger question is whether books will continue to play a substantive role in how we develop and mature as individuals, and whether these experiences will be as transformative as was common in our culture until very recently.

### Kindle and Alice

I was given a **Kindle** last year. I had kept abreast on the state of eBook readers, and have addressed eBook issues in my professional life on a daily basis for many years. However, I had resisted the device bandwagon — partly

for love of printed books, and partly due to the immature development of the eBook reader industry. I decided to try a classic work, *Alice's Adventures in Wonderland*, which in spite of being in the public domain cost me ninety nine cents (grrr...). The words of the book were all there, and the e-ink technology certainly made the reading easy on the eyes. The illustrations were well-rendered, and I could make annotations if I so chose. However, the experience didn't replicate my reading of the same work as a child — and this I mainly attribute to the lack of a unique reading experience, one which embodies both the physicality of the object and the world of people and ideas contained therein. In separating the intellectual content from the container of information, we have paved the way for standardization of experience and a narrowing relationship with the intellectual object. When the rich and navigable architecture of the book as artifact is translated into a binary code of zeroes and ones, the quality of the interaction is fundamentally altered. It seems highly doubtful to me that the reading of,



say, **Shakespeare's** plays on an eBook reader can have the same transformative influence on the human mind as the printed book. It more resembles the structure and functioning of a database in how we can view it, search it, extract it, analyze it, and remember it. The fixity of the print medium is replaced by the open-endedness of the digital form — and this changes our relationship with the work in a substantive way. As we move further into the digital realm of reading, it is worth considering how this affects our memory of what we read. Interactive books, customizable books, and collaborative experiences will have an influence on this relationship.

Memories represent our innermost personal experiences captured and embedded in our cerebral cortex, whether readily accessible or deeply folded away. However, memory also bears a direct relation to our self-understanding, our sense of perspective on reality, and our ability to shape our actions, our behaviors, and our relationships with others. Who are we? How do we see our place in our world, and how does our self-identity — imbued by the magic power of words — define ourselves?

If it turns out that most reading in the future will occur with eBook readers, or smartphones, or tablets, the impact will extend way beyond the publishing sector, the library world, and the information technology industry. It could significantly alter the way we internalize the very personal experience of reading books, and the memory formation that plays a subtle but inescapable influence on who we are and how we learn.

### Memory and Reading

There is a clear relationship between memory and the processing of information. The neuropsychiatrist **Eric Kandel** informs us that, “For a memory to persist, the incoming information must be thoroughly and deeply

processed. This is accomplished by attending to the information and associating it meaningfully and systematically with knowledge already well-established in memory.”<sup>73</sup> To the extent that we race from one media stimulation to another, with involuntary lightning speed, our long-term memory will become weaker and thinner. The connections with existing memories will be more challenging. As we now live and work in an environment punctuated with interruptions, distractions, and the push and pull of information stimuli, this is a leading phenomenon of our times. How this affects the ability to focus as well as the quality of our thinking, in regards to the interaction with eBooks, is no small matter to ponder.

The child development expert **Maryanne Wolf** notes that “The mysterious, invisible gift of time to think beyond is the reading brain's greatest achievement; these built-in milliseconds form the basis of our ability to propel knowledge, to ponder virtue, and to articulate what was once inexpressible — which, when expressed, builds the next platform from which we dive below or soar above.”<sup>74</sup> Our relationship with books will evolve as the form and function of books evolve. It is too soon to predict how this will impact the reading experience, but the revolution we are undergoing has more implications than anyone could have imagined when the Web and hypertext — remember that word? — were born almost twenty years ago. The coming generations will learn in a very different way from the way we have learned, and the implications for reading, memory, and libraries will be quite huge, for better and for worse. The ability “to articulate what was once inexpressible” will move in new directions. Human knowledge will be captured and communicated in new — and maybe startling — ways.

Intriguing is the notion that digital media, books included, allow us to refashion memory in ways that could never have been contemplated in previous generations. **David Weinberger**, in his wonderful book *Everything is Miscellaneous* argues that “...if [photo] albums are the archetypes of memory, memory becomes less what we have assembled and locked away and more what we can assemble and share.”<sup>75</sup> Applying this to reading, memory shifts from a personal construct into a communal experience — the interaction and sharing of digital objects creates a mosaic that has more layers and intricacies than any solitary experience could provide. Memory becomes more of a social construct based on shared learning, shared knowledge...and shared reading across space and time. At the same time, an enormous fragmentation of experience is occurring since the form and content of reading is exploding in many directions. These changes will affect what we remember. The eBook will become a shape-shifter capable of pouring itself into a wide range of containers, systems, and spaces. It has become clear in recent years that the eBook is far more than a digital version of a print book — it enables new associations of thought, new forms of learning and thinking, new forms of knowledge, and flexible ways to transmit scholarship. The incorporation of video, audio,

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data, and other forms of content is transforming the book into a multimedia learning experience. Multiple online reading practices are based on various needs, e.g., research, leisure, fact-checking, commentary, etc. The solitary reading act will still exist, of course, but will be surrounded by a conversational dynamic that shapes the original act and overlays the initial experience, and hence the original memories. This is well underway today, but the trend will accelerate in the years to come. While face-to-book clubs will continue to flourish, for example, I would guess that they will be greatly eclipsed by digital reading in shared spaces.

### Memory Across Time

Let's come back to **Kandel**. He reminds us that, "The most important function of memory in the real world is to link past, present, and future... This intricate interaction of past, present, and future allows us to maintain a coherent identity and to develop flexibly and adaptively in knowledge and experience. It is essential to the development and maintenance of a self-concept and thus is integral to autobiographical memory."<sup>6</sup> In the digital age we face a bewildering and perhaps dizzying recalibration. Books and the printed word have profoundly shaped who we are, as individuals and as librarians, but our experience of cultural knowledge is undergoing a sea-change that is leading to new forms of knowledge, new forms of culture, and new values. While the science of memory has made enormous strides in explicating the functioning of the brain and the complex characteristics of memory, the future of how we remember and what we remember is an open question.

Is memory tumbling into a rabbit hole as we adapt eBooks and other digital forms into our lives? On a collective level, there are attempts being made to capture and excavate our collective cultural expression, such as the **Library of Congress'** decision to archive four billion tweets, and preservation initiatives such as **Haathi Trust, Portico, and LOCKSS** are becoming credible and successful, though still in their infancy. The library community is facing these challenges with new vigor and imagination and with a keen eye on sustainability as well. The **CRL** certification process for auditing trusted digital repositories is an important dimension of this new strategy of sustainability.

### The Rabbit Hole Again, or...

We, of course, don't have the option of returning to the "normal world" as **Alice** did. Our wired reality has many implications — positive and negative — for the experience of reading, our relationship with books, and the workings of memory. The more I read about memory the more fascinated I am. Long-term memory (e.g. what did I get for my sixth birthday?); short-term or everyday memory (e.g., what did I forget to buy at the grocery store yesterday?); procedural memory (e.g., how to ride a bike); and semantic memory (e.g., knowledge of the world, such as places and facts) — all of these are interwoven in our consciousness in complex ways... it is an ever-present pulse. As language

is critical to this process, how will the eBook affect memory formation and cultural definition? I'm no scientist, but I can't help but think that the new ways in which we will encounter and experience reading will certainly impact the functioning of memory.

The eBook implies new attitudes to navigating text, integration of other media such as video and audio formats, non-sequential reading, new forms of annotation, seamless collaboration, and standardized containers (e.g., **iPads, Kindles, Kobos**, etc.). The elephant in the room is our cognitive overload that plays havoc with memory — everyday at work I'm sure there are issues or tasks that

I'm surely forgetting about, and I doubt that I'm alone! Our immersive digital communication technologies and lifestyle will affect reading and memory like nothing else since the printing revolution that **Gutenberg** brought about in the 15th century. I doubt that we will end up in the rabbit hole with **Alice**, where past, present, and future have no compass. For **Alice's** sister this was nothing but "a curious dream." However, for us the eBook will play a pivotal role in redefining our relationship with ideas and narratives expressed in long form, and thus in reshaping our understanding of our selves... and the intense memories of reading that help make us who we are. 🐘

### Endnotes

1. **Bob Nardini**, "Print," *Against the Grain* v.22#6, Dec. 2010-Jan. 2011 p. 77.
2. **Nicholas Carr**, Rough Type blog, <http://www.roughtype.com/> accessed Jan. 19, 2011.
3. **Eric Kandel**, *In Search of Memory: The Emergence of a new science of the mind.* (New York: Norton, 2006), 210.
4. **Maryanne Wolf**, *Proust and the Squid: The Story and Science of the Reading Brain.* New York: Harper, 2008. p. 229.
5. **David Weinberger**, "Everything is Miscellaneous: The Power of the New Digital Disorder" New York: Henry Holt, 2007. p. 15.
6. **Kandel** 313.



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and development of electronic publishing in Poland, Russia, and China fascinating. While the growth in the former two countries has been slower than in some parts of the west, Russian publishing had suffered with the advent of Perestroika in the 1980s, its growth and development seem to be strengthening. For China, it was apparent to everyone that electronic publishing is very "hot" there. We also heard about exciting new efforts to resurrect the value of all of our libraries' heritage microfilm collections by blending automated metadata systems with PDF views of what we already have on microfilm.

We heard a lot at the meeting of the need for everyone to pull together to meet the challenges of the digital world. Webscale is the new watchword, the movement to reduce the cost of individual transactions by taking advantage of the Web's ability to do work on behalf of large numbers of customers or participants in a particular area, and through its use we might all make it out alive through this period of transition.

**Fiesole** was once again a great experience and I am looking forward to next year when the **Fiesole Retreat** returns to the golden hills of Florence, Italy. 🐘