
E-readers are for Reading: An Informal Consideration of Reading's Next Steps

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Abstract

The e-reader is sweeping the book and library world like a storm, with some theorists arguing that the end of the publisher, the end of the library, and even the end of the book are near. Do e-readers bring an end to literacy as we now know it, or are there avenues of inquiry we can use to engage this change in a more positive light? To begin to answer this pressing question, this article presents an informal survey of a series of pertinent issues that have to be tackled before making such decisive predictions.

Keywords

E-reader; E-reading; E-book; Electronic learning

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The INKE Research Group comprises over 35 researchers (and their research assistants and postdoctoral fellows) at more than 20 universities in Canada, England, the United States, and Ireland, and across 20 partners in the public and private sectors. INKE is a large-scale, long-term, interdisciplinary project to study the future of books and reading, supported by the Social Sciences and Humanities Research Council of Canada as well as contributions from participating universities and partners, and bringing together activities associated with book history and textual scholarship; user experience studies; interface design; and prototyping of digital reading environments.

What is reading?

The vast literature on the history of writing, reading, publishing and librarianship is grounded on the fundamental notion that human communication by written text is essential to present day culture and society. The change from mnemonic icons to versatile alphabets enabled the stability and persistence of well-reasoned thoughts through reading. With this shift, progress was no longer dependent on person-to-person contact, such as in small clans, and writing, and hence reading, became a universal memory.

Much research has shown that neither reading nor writing are “natural” senses, like speech, smell, and touch. This is well illustrated by the fact that we can smell and listen on our earphones while biking, but we cannot read, except very short messages, which, for this precise reason, are normally displaced in iconic form as traffic signs.

Reading and writing are human capabilities that developed only late in the history of homo sapiens; thus, the history of the book is also social history.¹ The technological developments of means of communication, from clay to moving type, to Unicode, have not only enabled a stable way of expression, but have also been an engine in shaping new forms of communication. Elsewhere, I have argued more extensively about the mutual interaction of technology and communication (Kircz, 2010). Although a message can be represented, or made public in very many media, every medium has its own characteristics that make it the preferred medium for certain types of reading. If this were not the case, we would not have so much discussion about the transition to electronic media.

Physiologically, reading is a capacity unique to humans. Over the last decennia, much work has been performed by neurologists in an effort to try to understand the human language faculty. Recently, brain research has furthered our understanding of the faculty of reading (Wolf, 2008). But, even if the mechanics of reading are never fully comprehended, understanding and communicating are highly social activities, and it is in that social process that we have to reconsider our notion of literacy.

Despite the return of the pictograph in our modern world in the form of computer screens filled with icons, almost all content is dissolved in text. Even the most basic computer games require textual help for the uninitiated. This brings us to the old issue of genre and style. The writing of manuals demands a highly structured and in itself coherent approach. Poetry and prose have many diverse, established styles, but the flow of information is always distinctly different than in a manual. In a thriller, the reader must be kept spellbound until the end. In a manual or dictionary, the reading time spent by the reader must be as short as possible. This immediately indicates that the medium of presentation will be different.

Thus, in discussing the transition to electronic media, where the memory function is no longer in *presentation*, as in books, but rather in *storage*, two issues are particularly relevant: (1) the way the authors structure and store the message or story; and, (2) subsequently, the way this stored story is represented in a medium, enabling reading by the human eye. Literacy then becomes the capacity to read and understand very different messages in very different presentations.

In examining multimedia, children's picture books, where small children are taught language through pictures, are a pertinent example. "This is an apple" means that the recognition of the two dimensional picture of an apple is translated in the abstract word "apple." The picture is primary information, and the word "apple" is an explication in language of the very object. The linguistic reasoning becomes primary information and the picture becomes secondary only after a human masters reading; in other words, with the capacity to read, the two dimensional picture becomes an illustration of the text. This shift is even more evident in science. In the mathematical presentation of a hyperbole, it is sufficient to use the formula and mathematical language to develop new ideas and applications, such as space-time physics; however, the picture of a hyperbole has much more explanatory value for non-mathematicians, even when they are told that the thickness of this ink line on paper is supposed to be nil. In an electronic environment, we are able not only to draw lines, but to also include animations, pictures, sound, video, games, and shortly three dimensional vision and haptic elements. It goes without saying then, that this explosion of expressiveness has been and will be first exploited by advertising and entertainment. But when people become used to new electronic capabilities, we will be confronted with the steep uphill route toward new ways of writing. As with writing, such as in the early periods of wood block, we have to understand the dialectic between abstract text, and now plural types of illustrations, to help us understand the texts as well as primary visual aspects of auditive information that demand linguistic explanation.

Here, we see the great challenge in new multimedia literacy. Novels, text without pictures, are the easiest objects for reading on electronic devices. As long as the type font and face are ergonomically correct, easy reading will be possible. The most important obstacle today is the quality of the screen; while the swift and versatile back-lit LCD screens of laptops and tablets are notorious for tiring the eyes, the stable e-ink readers are still in the first stages of development, allowing beautiful reading but not yet easy manipulation of text. In the case of educational or scientific books, the stakes are higher than with novels because here we have developed a high-level tradition of layout of text and scholarly books. This layout can, of course, be copied into an electronic reading device, but it is immediately clear that this is no more than a chimera of what an electronic multimedia book must become.

There is a separate class of books, such as dictionaries, that are in fact not books for reading. Here, reading is only a simple way of obtaining short chunks of pertinent information, such as a telephone number, address, or the translation of a word from one language into another. These publications, for which the book was only a transient state on their way to maturity, have ceased to be found in book form, but instead now exist as mature databases.

The new multimedia literacy will entail the use of traditional linguistic capabilities, as well as visual and auditive forms of communication, drawing on a new mixture of various neurological and psychological human features for communication and comprehension. A pertinent example lies in the flipping of newspaper pages, which on the Web has already become a process of hopping between textual, spoken, and visual information units; however, the relationship between them is far from seamless. It will take a long time before we reach a reading culture in which all elements find a “natural” place in the narrative.

Text and structure

The abstract equivalence between a notion on the one hand, and a sign or word on the other, is extended by the equivalence of parts of speech or whole paragraphs with words that are shorthand for complicated notions. This means that the structure of text is very important in understanding text. In earlier work (Kircz, 1998, and references therein), it was argued that, based on a historical analysis of the various forms of text production, in an electronic medium, the next division-group of comprehensive chunks of text will be a module; that is, a self-contained, coherent, and comprehensive piece of text, fit for re-use. This idea was first put forward for use in scientific texts in molecular physics (Harmsze, 2000; Kircz & Harmsze, 2000).

In the fields of critical theory and the humanities, much work has been done in what Landow (2006) calls *reconfiguring the text*. In these semantic approaches, whole parts of texts figure as small meaning-objects in comparison to iconic meaning-objects, such as a waste bucket on the desktop screen, which means: *Delete the name of this file from the file allocation table and put it for a while in custody, until you decide to free it back to a directory or discard it forever. Though only the entry is deleted, and only after the bits on the disk that contain the file information are overwritten, but it is still retrievable with special software.*

The real challenge in e-reading is neither the quality of reading nor the ergonomics of the e-reader device, though both are very important to its acceptance by the public; rather, the way we structure coherent electronic publications remains a key point in the development and proliferation of e-reading.

As previously alluded to, the concept of modularity of information implies that a narrative is structured according to a system that represents the flow of reasoning. Legal judgments are an illustrative example. In all argumentative texts, and most texts are argumentative, we have a clear division between statements, background information, discussions, conclusions, etc. This structure can be very domain- and genre-dependent (see, for example, De Waard and Pander Maat, 2010, who offer a model for molecular biology); but, having said that, we are immediately confronted with the essence of hypertext, namely the linking of information chunks. This structure is like chemistry; if we decompose a molecule into its constitutive atoms, we lose the essential features of the molecule. For example, water is not a pure addition of one oxygen and two hydrogen atoms. The glue holding these atoms together to form a molecule from independent atoms is called a chemical binding force, of which various kinds exist. Similarly, in hypertext, the binding forces are called hyperlinks; however, hyperlinks are very much under-researched. After so many years of Web technology development, links are still not point-to-point links and are unable to relate unambiguously a piece of text with another piece of text in another document.

Even worse, links are still considered to be a symmetric relation; however, in real reasoning, links are totally asymmetric. If I refer to another information object, be it a whole document, a paragraph, a picture, or a YouTube file, there is a reason. There can be many reasons to add a hyperlink to another person's work, including agreeing or disagreeing with the linked work, using the linked work as an illustration of one's own argument, using the linked work to show one's own scholarship, etc. But in the reverse direction, the link has a different meaning. If I refer to the work of another author as particularly valuable, it does not necessarily mean that the reverse is true; that is, that the cited author considers my work to be valuable. If I point to an explanation elsewhere, the link means "go to explanation," but the reverse link means "this text is used elsewhere to explain something." Links with meaning are at least as valuable as identifiers for retrieval purposes as nouns (Kircz, 1991; Sillence, 1992a, 1992b); but links represent activities, and activities are not nouns but verbs. Verbs are notoriously difficult to classify (Fellbaum, 1998), and so are links.

This necessary dissection of wholes into linkable independent coherent entities that are fit for reuse also requires an understanding of what constitutes a comprehensive entity. After all, a narrative, or even a highly hypertextual game, is still a singular narrative, just as Mark Danielewski's (2000) *House of Leaves* is a novel with a beginning and an end. In the same vein, every single scientific article is a leaf in the broad-leaved forest of a particular scientific field, but is still the unique expression of its author(s). In the intrinsically eclectic world of electronic publications, it becomes more than ever important to grasp the coherence and essence of a literary work or textbook.

Thus, to conclude, the quest of "what is an e-book?" is much more far-reaching than the transformation of a traditional paper book into an electronic form. Even that is not so easy, as has been discussed by Clifford Lynch (2001) and remains very relevant, even today.

Testing understanding

In a modest attempt to scratch the surface of the issues discussed above, at our institute, we started a research programme on e-books called *Amsterdam E-boekenstad*, or *Amsterdam E-books City* in English (AEBS, 2010). In this project, which is supported by the Stichting Innovatie Alliantie (SIA, 2010), we collaborate with publishers, distributors, and library organizations in order to gain a better understanding of how the transformation of textbooks into the realm of e-reading will take place. We have four distinct tracks: (1) the usability of e-readers, in particular e-ink readers; (2) the business model for educational materials, including all partners in the value chain; (3) the technological and ergonomical aspects of e-reading; and finally, (4) the editorial process of transforming the production chain from author to reader. Our first results are now reported on our website. In the usability track, we divided a group of 79 second-year marketing students into three groups. 30 students received the IREX DR1000 e-ink reader with a 10.2-inch screen, the largest screen on the market; 28 students worked with laptops; and 23 students used paper. They all used the same textbook for 10 weeks. Before starting, we had discussion sessions to establish the expectations, which tended to be very high. At the end, we again discussed all experiences. The results, in short, were that paper came through with flying colours, while half of the laptop users changed to paper, and the majority of the IREX users did so. The main problem with the laptop was that, although you

could search easily, browsing was a nuisance. Furthermore, the fact that there were many other applications on the laptop, like chat programmes, email, etc., which distracted the student from conscientious reading, was a big issue. The e-ink reader was mostly dropped because it was too slow in starting-up and browsing, and it was ergonomically difficult. Apart from that, both non-paper groups were disappointed that the e-version was just a pdf of the paper version and not an enhanced version with extras typical of an electronic environment. This was certainly an enormous drawback, as the expectations of e-reading were unconsciously linked to easy text manipulation together with scribbled notes and annotations. Here, and in a second group of students from our Interactive Media Department, the total “dullness” of the e-reader was a main critique. These, more-or-less, expected results show that a simple “copy” of a paper book into another medium is not sufficient to establish enthusiasm. This is in concordance with the large success of sales of novels in e-book form, since these electronic copies are meant for linear reading, from beginning to end of a sequential story. Textbooks, on the other hand, demand intensive browsing and referring forward and backward in the text. When we shared our first results with the manufacturer, the common conclusion was that the actual first generation of e-ink readers is really best for solid reading only. A second test is now underway in which we test the same IREX reader with members of city councils. These people receive piles of documents to read, discuss and make decisions deriving therefrom; thus, having all relevant materials stored in an e-reader could be highly efficient. In planned further research, together with Dutch professional textbook publishers, we want to concentrate on the authoring and editorial aspects of e-learning environments in which the book is an integral part.

In a separate line of research, we examine the business model for electronic textbooks. Here, we again face the issue of the whole and the part. Financially and pedagogically, we have to consider the opportunities as an integral whole. Defining the technical pre-conditions for the transition from paper to an electronic learning environment first requires the establishment of the social and pedagogical tasks that technology provides if the e-book is to be more than a flashy redressing of a printed text. In an institutional educational environment, we have to take the integral cost price into account. This means that on the cost side, we have to incorporate equipment, data infrastructure and storage, helpdesk, and website management. On the benefits side, we have the individual buying of books, damaging of books, and tens of millions of photocopies and prints, since in an e-learning environment, student papers and every other document should be electronic.

In our first workshop, of which a report (in Dutch) is given on our website, the issue of aggregators and licensing became prominent. We aim to develop further research for a model in which students find all books they need for one year in one listing of the e-books. It would be practical then that all books would be made available in one licence structure, to be paid for by the student or as part of the tuition. This way, books that are only partially or temporarily used in a course, which students tend to be highly resistant to buying, would be included in the packages. This study package might then also become a permanent source for the young professional after leaving school, if such a licence agreement could be extended into a personalised licence for an extended period of time. Currently, this research is in the initial stages, and it is hoped that further results will be available in a year's time.

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Note

1. For a good overview of all aspects that lead to e-books, see van der Weel (forthcoming).

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