The e-book phenomenon: a disruptive technology

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Libellarium, VI, 1 – 2 (2013): 3– 12.
UDC: 655:[002:004](485)=111
Proceeding of the *International conference Publishing – trends and contents*,
Pula, Croatia, 6-7 December, 2013

Summary

The emergence of the e-book as a major phenomenon in the publishing industry is of interest, world-wide. The English language market, with Amazon.com as the major player in the market may have dominated attention, but the e-book has implications for many other languages and book markets. The pre-e-book publishing world can be seen as a system in which authors delivered texts to publishers, who evaluated, edited, printed and distributed the published text to bookshops and thence to libraries and individual readers. This process has been going on since Gutenberg's re-invention of movable type in about 1439 (following its original invention in China in the 9th century, and the use of metallic type in Korea in 1234), in other words, for about the past 550 years. The invention of movable type was an instance of a disruptive technology: eventually putting monastic scribes out of business altogether. Similarly, the e-book has the potential to disrupt the processes for the production, distribution and use of authorial texts, and is already in the process of doing so. First, the phenomenon of self-publishing has emerged as a serious contender to the more formal process; secondly, publishers may derive significant economic benefit from the reduction in printing and distribution costs, as well as the ability to sell directly to the consumer through their own Websites; thirdly, the impact on booksellers may result in a further reduction in the number of independent stores – a decline already in process as a result of online bookselling; fourthly, user demand is resulting in libraries wrestling with the problems of how to manage e-books within their collection development and management processes; and, finally, the behaviour of readers is changing as the devices available for using e-books become more numerous and cheaper. Only someone blessed with absolute certainty in forecasting the future can know exactly how things will change, but there is little doubt that the development of the e-book will bring about substantial changes in the processes of book production, distribution and use – and many of these changes will surprise us.

KEYWORDS: e-books, e-publishing, Sweden, small laguages, book markets, reading research.

Introduction

The emergence of the e-book as a major phenomenon in the publishing industry is of interest, world-wide. The English language market, with Amazon.com as the major player in the market may have dominated attention, but the e-book has implications for many other languages and book markets.

The statistics are compelling, but the scale of things should not be exaggerated: for example, in May 2013 the BookStats report noted that the sale of e-books had increased by 45% since 2011 – 457 million e-books were sold in 2012, but that is 100 million fewer than the number of hardback, print books sold (Book Industry Study Group 2013). Similarly, in the UK, in 2012, e-book sales were 89% higher than in 2011, totalling £145 million, but physical book sales totalled £982 million, i.e., almost seven times as much.

In other countries the percentage increase in e-book sales is much lower: e.g., 3% in France and 2.4% in Germany. In the case of France, certainly, one factor is the number of devices capable of reading e-books: in the USA some 34% of the population own a tablet computer, whereas in France it is about 10%; in the USA 56% of the population have a smartphone, while in France it is a little over 31%; in the USA 25% own an e-reader, in France it is about 1% (Wischenbart et al. 2013).

What we have called "the small language" issue also creates differences – such languages are typical of countries with relatively small population numbers and, consequently, with a relatively small publishing industry. The market for books is limited and perhaps the market for e-books is even more limited – even if the same proportions that apply in, say, the English language market apply in such countries – would 6% of the market in a small country constitute a big enough business?

The project's theoretical approach

We are exploring the e-book phenomenon within the theoretical framework developed by Winston (1998). The essential elements of this framework are:

1. the basis of technological innovation is scientific understanding of some phenomenon. In the process of innovation, scientific ideas become the basis for technological developments through a process of ideation;
2. a variety of prototypes is likely to emerge as technological development takes place;
3. a supervening social necessity determines which prototype succeeds as the 'accepted' innovation;
4. at some point a prototype (or prototypes) become accepted as 'inventions', at which point it enters the marketplace.

We can see at least some of these elements in the history of the development of the e-book.

Development of the e-book

The invention of movable type was an instance of a disruptive technology: eventually putting monastic scribes out of business altogether: in the fifty years after the invention, some eight million books were printed. Similarly, the e-book has the potential to disrupt the processes for the production, distribution and use of authorial texts, and is already in the process of doing so, rather more rapidly than did the printing press – it, too, is a disruptive technology.

The notion of a personal, portable device for reading books actually goes back to 1930, when Bob Brown (a man of numerous talents) suggested a device, based on miniature microfilm, which would be "A simple reading machine which I can carry or move around, attach to any old electric light plug and read hundred-thousand-word novels in 10 minutes if I want to, and I want to" (Brown 1930: 28). The machine does not seem to have been built, and it is doubtful whether the existing technology would have been appropriate, but the ideation was there.
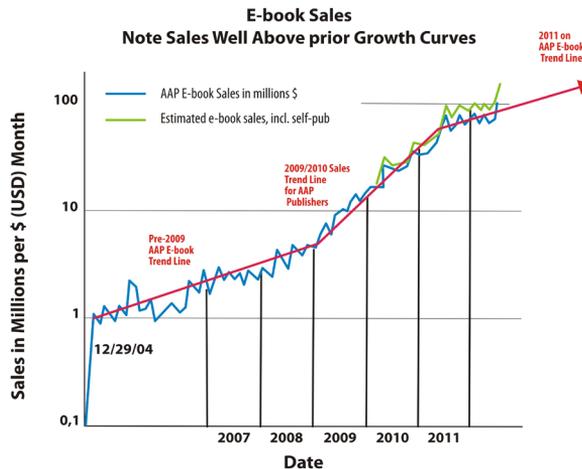

Figure 1: Growth in e-book sales (Source: AAP)

In 1998, the first e-readers were produced: these were the Rocket E-book and the SoftBook Reader (Lebert 2011). Interestingly, the investors behind both of these were the bookseller Barnes & Noble and the German media giant Bertelsmann for the Rocket and publishers Random House and Simon and Schuster for the SoftBook.

The supervening social necessity is the key concept in Winston's theory, by which he means the coalescing of various social and technological forces that turn the innovation into a practical reality. We can perhaps see this in the emergence of those early e-book readers: here, the technology was at a stage when various prototypes could be produced and publishers, alert (as companies need to be)

to threats and opportunities were instrumental in fostering the new technology. However, there was no immediate uptake of the devices – at this point it seems that only the early adopters (Rogers 1962) were inclined to buy e-readers and read e-books. Gemstar, the company that bought both Rocket and SoftBook (and went on to produce more) went out of business in 2006.

However, 2006 was the year when the growth of e-book sales actually began, as Figure 1 shows. There were a number of reasons for this, for example, the first Sony e-reader was produced in that year (meeting with varied critical response), but probably the main reason was that the PDA (now largely forgotten as its functions were taken over by mobile phones) and Apple's iPod (first produced in 2001) were able to read e-books and the early adopters of e-books were using these as reading devices. Palm was probably the dominant PDA manufacturer at the time (it too is now dead) and the company set up a Website (e-reader. com) to sell e-books and, in 2006, that venture was said to be thriving. However, it didn't thrive for much longer and Sony was badly hit by Amazon's launch of the Kindle in 2007.
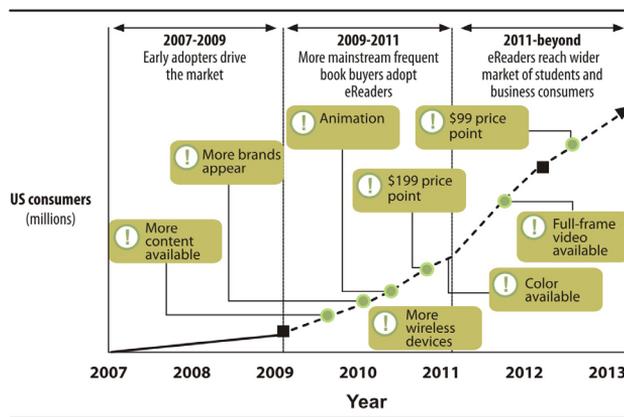

Source: Forresterresearch, Inc.

Figure 2: Drivers of growth of e-reader sales and content (Source: Lardinois, 2009)

Figure 2 shows the growth in the sale of e-reader devices and content, within the Rogers's framework of early adopters, mainstream buyers, etc. At this stage of the project, it is rather too early to be predicting the outcome in terms of how we define the supervening social necessity, but, if we consider the idea of a number of forces coalescing at a particular point in time to provide the driving force for the sale of e-books, I think we can say, that in round about 2009, devices were available, content was becoming more readily available, publishers were getting on board in increasing numbers, and people were buying e-readers in larger numbers – the technology was becoming mainstream.

In April 2010, another major driver appeared on the scene – the Apple iPad. By October 2013 more than 170 million iPads had been sold and may exceed 200 million this year. Apple not only has customers, it has a fan-base: people who buy a product simply because it is a new Apple product, and I suspect that it is the only technology company that can be described in those terms. It is not surprising, then that sales took a further upward turn in 2011.

Also the devices became cheaper over time, e.g., Sony's e-Reader was $350 in 2006, today it is at least $100 less; the first Kindle was also $350, today you can buy one version for $69. From the publishers' point of view, e-books simplify the production process, have negligible distribution costs and return about the same profit percentage as print books, and from the reader's point of view, overall, e-books are cheaper than print books, they are more portable, and many are freely available. It has also been noted that it is less easy to see what one is reading, when you are sitting in the subway train on the way to work (Smith 2013).

In other words, coming together we have appropriate technology, appropriate content, economic viability, and user convenience: a pretty unbeatable combination, and, to a degree, unexpected, since before the Kindle and the iPad emerged, e-books were not expected to become a significant part of the book market.

In the traditional publishing area an author creates a text, and possibly uses an agent to find a publisher, or does so independently. The publisher employs book designers to determine type styles, layouts and cover illustrations (possibly outsourcing these functions). The book is printed (either outsourced to a printer or undertaken in-house) and distributed, making use of distribution services, or public facilities such as the mail. Ancillary services such as marketing and publicity are employed, again, either in-house or outsourced, to present the book to the intended audience. The main retailers are the bookshops, although supermarkets and online suppliers are increasingly important, and libraries of all kinds obtain their books either through booksellers, or directly from the publisher, or from some book supply agency.

There are many, more complex models of the process, since roles such as editor, copy-editor and proof-reader are also involved in the process, but these are the main players. We can see that in the present system, the publisher is at the centre of things, receiving manuscripts, deciding to publish, setting up design, printing, distribution, marketing, etc., etc. How, then, is the development of the e-book going to disrupt this process, if it is, indeed, a disruptive technology.

Disruptive technologies

Christensen (1997) notes that the products of a disruptive technology tend to be simpler and cheaper than the established equivalent, they offer lower marginal profits and emerge initially in emerging or insignificant markets. "By and large a disruptive technology is initially embraced by the least profitable customers in a market" (Christensen 1997: xvii). For all of these reasons established companies rarely invest in such technologies, since they are unlikely to satisfy the company's requirements of increased profitability and growth. For that reason, the products tend to be developed, promoted and marketed by new entrants to the industry.

When we test the e-book against Christensen's criteria we get rather mixed results. If the e-book is simple a digital file of an existing printed book, it will certainly be easier to produce and distribute than to make a second print edition. If, however, we have in mind an enhanced e-book with video files, animations and interactivity built in, the costs of production may be rather higher than for a print book with the same text but with an inability to incorporate such novel features.

Whether e-books are priced cheaper than the print equivalent is a decision to be taken by the publisher, although Amazon is rather distorting the market by selling books for less than publishers would wish. If they are sold cheaper, of course, the marginal profit (the amount of profit made by the publisher on a single copy) is likely to be lower.

Certainly, the e-book emerged initially in a relatively insignificant market, i.e., in Project Guntenberg's making available electronic copies of out of print books to anyone with a computer. At the time a minority interest was being satisfied and, as the people concerned were getting the books free of charge, they were certainly the least profitable customers for the book market.

Finally, we see non-publishing organizations taking the lead in developing the e-book: free services such as Project Gutenberg, a computer manufacturer like Apple, and the online bookshop, Amazon. Other new entrants include e-book aggregators, such as Smashwords.

The effects of disruption

We can consider the effects of disruption on the different players in the market. First, for authors, we see an increase in self-publishing – according to Bowker (2013), in the USA: "the number of self-published titles in 2012 jumped to more than 391,000, up 59 percent over 2011 and 422 percent over 2007. E-books continue to gain on print, comprising 40 percent of the ISBNs that were self-published in 2012, up from just 11 percent in 2007".

The press release included in the report goes on to note that self-publishers regard themselves as businesses, rather than as simply writers and that, "they invest in their businesses, hiring experts to fill skill gaps, and that's building a thriving new service structure in publishing".

Turning to bookselling, in the UK, in 2005 there were 1,535 independent booksellers (i.e., not attached to a chain such as W.H. Smith), by 2012, this had shrunk to 1,028, with 73 closing in 2012 alone. The large bookselling chains have also been affected: probably the most noted has been the closure of the Borders group in the USA (Magee 2011) and, also in the USA, the reduction in the number of Barnes and Noble bookshops. In a country like Norway, where most of the bookshops are owned by the publishers, the survival of bookshops is going to be pretty well entirely an economic question – publishers will be asking, *Is it worthwhile to keep our bookshops going*?
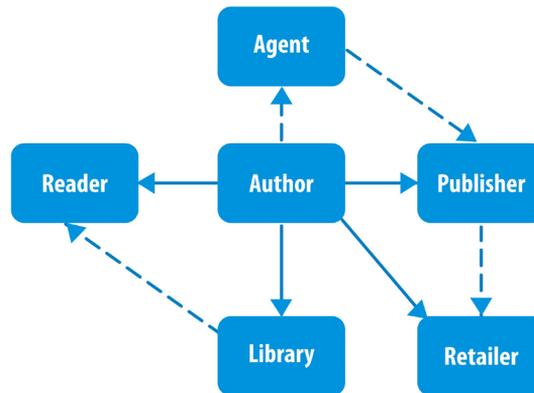

Figure 3: The disrupted book market

Academic libraries in particular have been managing electronic resources for years and negotiating deals with publishers. Now the impact is more widespread, hitting public libraries to an extent greater than before, so the impact varies by type of library. How to manage the e-book when you can't control them in the way physical books are controlled. How to negotiate with publishers, who perceive the (public) library as a threat, rather than as a partner. In the long-term, the question will be whether libraries as such are viable, when individual access to electronic resources is so simple.

The behaviour of readers is changing as the devices available for using e-books become more numerous and cheaper and a variety of factors seem to drive the adoption of e-books, probably associated differently for different kinds of readers and different kinds of books. For example a study by Rainie et al. (2012) noted that e-books were preferred for having a wide selection of books to choose from, for reading while travelling or commuting and for being able to get a book quickly, while printed books were preferred for reading to a child and for sharing with other people. The two were almost equal when it came to reading in bed.

Figure 3 summarises the potential disruption: it suggests that the author may become the central player, rather than the publisher, with more choices about how a book shall be published and with the possibility of becoming an author/publisher and dealing directly with libraries, retailers and publishers. To keep the diagram simple, I omit the other possibility, which is that the publisher will bypass bookshops and libraries and deal directly with readers – as some already do.

Conclusion

We are only at the beginning of the disruptions that are likely to be caused by the e-book and its associated technologies and there is no way that we can be precise about the future. However, we can hazard some guesses on the basis that things will continue to develop in the way that they have done so far.

The first thing we can be reasonably sure about is that the e-book phenomenon is not yet a mature technology (or set of technologies) and that further developments are not only likely, but inevitable. If we look only at the reading technology, for example, ideas of readers that are little thicker than a sheet of paper have been mooted a number of times and are being actively researched.

Secondly, it is evident that different cultures and different countries, as well as different market sectors, proceed at different rates and perhaps adopt the technologies for different reasons. In other words, across cultures there may not be a single supervening social necessity.

Thirdly, the present structure of publishing, bookselling and library lending may not be sufficiently robust to stand against the developments taking place. The effects of the disruption are already being felt, as noted earlier in this paper, and the disruptions are already straining relationships among the different players in the market. Those relationships are likely to be strained further in the future.

Finally, we can be fairly sure that the disruption will continue until a new equilibrium is reached: and the book scene may look very different.

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Sažetak

Fenomen e-knjige: tehnološka prekretnica

Razvoj e-knjige kao novog fenomena u nakladničkoj industriji od globalne je važnosti. Iako se najviše pozornosti pridaje tržištu engleskog govornog područja, s tvrtkom Amazon.com kao ključnim igračem, implikacije pojave e-knjige razvidne su na mnogim tržištima i na mnogim jezicima. Nakladništvo se do pojave e-knjiga moglo opisati kao sustav u kojemu su autori isporučivali tekstove nakladnicima, koji su iste tekstove vrednovali, uređivali, tiskali i distribuirali posredstvom knjižara i knjižnica sve do individualnih čitatelja. Takav se proces uobičajio od Gutenbergova vremena i traje posljednji 550-ak godina. Otkriće tiska pomičnim slovima također je primjer tehnološke prekretnice, koja je s vremenom dokinula sustav umnažanja knjiga prepisivanjem. Slično tome, potencijal e-knjige je raskidanje s uobičajenim praksama proizvodnje, distribucije i korištenja autorskog teksta, što je već postalo razvidno kroz sljedeće procese.

Prvo, fenomen samostalnog objavljivanja djela postaje ozbiljna konkurencija tradicionalnom nakladništvu. Drugo, nakladnici usmjeravanjem na e-knjige mogu ostvariti veće uštede u troškovima tiska i distribucije, a stječu i mogućnost izravne prodaje knjiga kupcima posredstvom vlastitih mrežnih stranica. Treće, navedeni će razvoj dodatno smanjiti broj neovisnih knjižara, a taj je proces već otpočeo pojavom online knjižarstva. Četvrto, zahtjevi korisnika rezultiraju problemima s kojima se suočavaju knjižnice kada je riječ o organizaciji kolekcija e-knjiga i njihovu korištenju. Naposljetku, ponašanje čitatelja se mijenja budući da uređaji koji omogućuju čitanje e-knjiga postaju sve brojniji i jeftiniji. Samo bi osoba posve sigurna i pouzdana u predviđanju budućnosti mogla predvidjeti daljnji razvoj, ali jasno je da će e-knjige prouzročiti supstancijalne promjene u proizvodnji, distribuciji i korištenju knjige – a mnoge od tih promjena bi mogle biti iznenađujuće.

KLJUČNE RIJEČI: e-knjige, e-nakladništvo, Švedska, mali jezik, knjižarstvo, istraživanje čitateljskih navika.