E-books in academic publishing:

Theory, practices and technical issues

(Master Thesis)

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Introduction

Technical progress has brought about a disruptive change in the publishing industry. The e-book, a modern invention, is seen as being set to soon achieve dominance in the consumer market. However, academic publishing has begun to experience this e-ntrusion somewhat later than the trade sector has: the onward march of e-books in academic publishing is still blocked for a number of reasons. Among them, the lack of available content, issues with formats and pricing, the absence of viable business models, and readers' personal preferences for paper over digital copies play an important role.

Much of the research into the e-book market focuses mainly on trade publishing; relatively little research has been carried out on digital academic publishing. At the centre of the current paper is the battle between e-book formats, which will be discussed in the following chapters from different perspectives. The first two chapters directly deal with the issues of formats by discussing their suitability to being used as formats for academic e-books. The last chapter debates the challenges digital academic publishing is facing today (pricing models for different formats, publishers' choice of a suitable format, and changes in academic publishing caused by the development of technologies and formats in particular).

In this paper, digital publishing is understood, in a broad sense, as the production of digital products for digital distribution. The production of e-books is therefore a specific form of digital publishing. An e-book is understood as '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.'[1] Scholarly and academic publishing are considered synonymous and do not include the publishing of textbooks.

The comparison between academic publishing and trade publishing is unavoidable because digital trade publishing will determine the market and readers' expectations of e-books in general; however, what may be crucial for successful trade e-books may be of little relevance for academic e-books, and vice versa. The relation between e-books and e-journals can be seen in the same light as the influence of the e-book trade sector on academic publishing, because

[1] M. Vassiliou, J. Rowley, 'Progressing the Definition of "E-book"', *Library Hi Tech*, Vol. 26(3) (2008), p. 363.

STM publications at the moment determine the direction taken by the academic e-market: the academic community is likely to make the same demands of academic e-books as it already has for e-journals in terms of fast and easy access, regular updates and so on. It is important to mention that this paper deals with the European and American academic markets. Another caveat is that it was not possible to cover every area of academic publishing, as the paper would have become unreasonably long. Thus, some issues related to VAT, DRM, piracy, and distribution channels were intentionally omitted.

One of the most important issues in digital publishing is format. The wide range of available formats makes it difficult to decide which one of them should be used to deliver e-books to end-users. The problem becomes even more complicated because of the range of reading devices that are compatible – or not – with a particular format. There have been numerous articles and debates about the best format, but only a few discuss the issue in the context of academic publishing or of the needs of the academic community. The objective of this paper is not to find the best format, but rather the opposite: to show that there is no format that can meet all the requirements of all the content it may be required to deliver. Thus, the first chapter of this paper will be devoted to a description of different types of content and their amenability to digital delivery. It will examine the most common formats for academic e-books and demonstrate that the choice of format is determined by different factors (by the type of content, reading device and modes of reading). It will do this by discussing the nature of academic work and by exploring an interdependence of formats, types of content, reading devices and reading modes.

The second chapter will go on to test the suitability of formats to perform the tasks that academic work requires. A range of functions (pagination, searching, printing, annotation and bookmarking functionality) vital to academic work, will be scrutinized in different software reading systems. The second chapter will focus on only two formats (PDF and ePub) which can be seen as the yin and yang of the genre – so different are their natures (i.e. their technical specifications and thus their areas of use). A conflict emerged when one of the formats (ePub), initially 'born' within trade publishing, started to target the alien turf of academic publishing, the domain of PDF. The results of the examination of software reading systems are presented in

the ‘ePub as a format for academic e-books’ section. Furthermore, this paper will discuss the issues of typographical niceties in e-books as relevant for the academic community. The last section of this chapter is devoted to a new trend in publishing, i.e. accessibility of e-books. Issues of the accessibility of e-books are not directly connected to academic publishing but cannot be ignored in the light of this ongoing battle between the different formats.

The third chapter will introduce practical matters important in academic publishing and related to e-books and their distribution. A discussion of challenges posed by the harvesting of statistics relating to e-book will open the last chapter, followed by a section on pricing models. Another sticking point comes with the selection of third party vendors and business models – an acknowledged area of concern for many publishers.[2] Traditional distribution channels in academic publishing – aimed at libraries – cannot satisfy the need of individuals to own their own books. Moreover, their close ties with libraries and educational institutions have for a long time in fact hindered publishers in developing an academic book market for individuals. With the development of the Internet and digital technologies, however, these needs can be addressed more successfully. Thus, there are nowadays visible signs of a shift from the dominant business-to-business model to a business-to-customer approach. In addition, while discussing business models, their dependence on the type of content will be referred to. The chapter concludes with speculation on the future fate of academic publishing in the digital age, both in the short and the longer term.

For the examination of this thesis, various types of sources were consulted. For the theoretical framework (first chapter), concepts and theoretical models were adopted from works of sociologists (mainly from J.B. Thompson) and researchers of digital reading and usability of different reading devices. For the description of the formats’ functionality (second chapter), facts and ideas were predominantly taken from technical manuals, how-to guides, tutorials, users’ guides, Help and FAQ sections of the software developers’ websites. Information specifically about practical issues of e-books (third chapter) was drawn from different field guides, publishers’ surveys and reports, and press releases. All three parts were

[2] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 14.

reinforced further by information found in a variety of electronic sources, including official websites, online journals and blogs.

Chapter 1. Interdependence between e-book formats, types of content and reading devices

As electronic publishing matures, publishers unavoidably need to decide how they are going to enter the quicksand that is an e-book market. It is true that e-books found their place faster in the field of trade publishing 'where the growth of e-book distribution and sales have skyrocketed over the past five years',[3] but until recently they could not be considered potential rivals for printed academic books. Beside e-books, however, new technologies have affected academic publishing in different ways: new developments have surfaced that are still unknown in trade publishing, e.g. open access, nanopublications and semantic enrichments. These possibilities have clearly emerged within the world of academic publishing and have not yet crossed over into trade publishing. Currently, enhanced publications – mainly developed for the educational and research markets – are slowly entering the world of trade: more and more experiments are being done to introduce this technology into fiction and non-fiction publications (for example, the boutique publishing house Atavist[4], which specialises in enhanced non-fiction).

In 2009, the Association of Learned and Professional Society Publishers submitted a report on academic book publishers' policies and practices. One of the challenges the authors had to face in order to design the survey was the heterogeneity of academic products and the way different types of books are used by their end-users. As J. Cox *et al* puts it,

> Textbooks, monographs, reference works, handbooks, manuals, conference proceedings, and technical reports serve different purposes, and are read by different readers who reach them by different routes. The functionality that is being developed

[3] T.A., Carpenter, 'It Time for Scholarly Journal Publishers to Begin Distributing Articles Using EPUB 3?', *The Scholarly Kitchen*, March 19, 2013, n.pag. <http://scholarlykitchen.sspnet.org/2013/03/19/is-it-time-for-scholarly-journal-publishers-to-begin-distributing-articles-using-epub-3/> (Accessed 6 April 2014).

[4] About Atavist, official web-site, <https://atavist.com/our-story/> (Accessed 15 June 2014)

for each type is specific to the type and purpose of the content itself. As a result, book publishing has been slower to develop online products than journal publishing.[5]

In this regard, it is useful to analyse different types of content and their suitability to being disseminated online or accessed via different devices (mobile phones, dedicated e-readers, laptops, etc.). Additionally, this chapter will explore the requirements placed by academic work on formats (ePub, HTML, PDF[6]).

Types of content

According to J.B. Thompson, who distinguishes between four main groups of content (namely data, information, knowledge and narrative), not all forms of content are equally amenable to electronic dissemination (Fig. 1[7]). In terms of publishing, educational, scholarly and trade publishing are less well-fitted for online dissemination, while reference, professional and journal publications are likely to be more 'online-friendly'. The reasons for such inequality lie in the nature of content itself: the more it is fragmented or 'bitty' (as in case with data and information, the examples of which are stock rates and reports about the results of experiments correspondently), the more it is subject to online dissemination. Moreover, the context in which content is situated can be another reason for successful or hindered dissemination. For example, in the case of reference works, such as dictionaries and encyclopaedias, a reader is unlikely to read the content from cover to cover, and the context of each reference entry is not important: the information is mainly organised in an alphabetical order or, roughly speaking, at random. The context is not meant to add any additional information or 'value' to it, thus these bitty or fragmented pieces of information can be easily independently distributable. Quite opposite, content that urges storytelling and unbreakable or 'unbitty' narrative cannot be presented separately in its parts because it can function successfully only in its full 'linear' form, as something is missing otherwise. Successful examples of narrative non-fiction genres for

[5] J. Cox *et al*, *Scholarly Book Publishing Practice: An ALPSP Survey of Academic Book Publishers' Policies and Practices*, First Survey, (ALPSP, 2009), pp. 6-7.

[6] Although there is no separate section on the PDF format, it is discussed in detail in the second chapter of this study.

[7] J.B. Thompson, *Books in the Digital Age*, second edition (Polity Press, 2011), p. 328.

online dissemination include diaries or travel notes. Their nature – bitty texts compiled date by date[8] – is perfectly suited for online presentation, perhaps even better than for paper presentation.

At this point, it is important to explain that J.B. Thompson's idea of a successful or hindered online dissemination is twofold it entails not only distributing content online (via websites, for example) but also the possibility to consume it while online. For instance, the regularity of the releases (twice per month) and the brevity of the shelf life (one month) of Mills & Boon series titles made them perfect for online dissemination[9], but their is likely to take place 'offline' while reading them on tablets or e-readers, after the files have been successfully downloaded and saved. Stock exchange records are a good example of content that is perfect for online dissemination and consumption due to its bitty and dynamic nature.

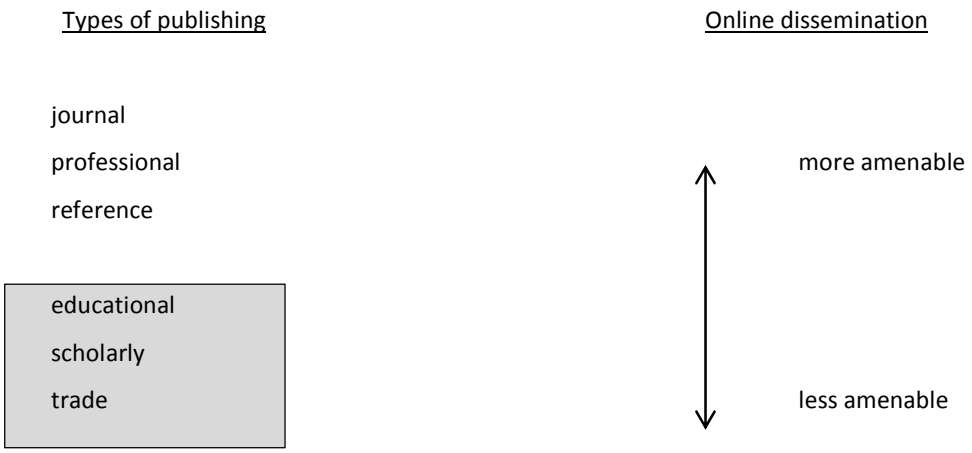

Figure 1. Technologies and types of publishing

Although it is not possible to provide a comprehensive account of all factors affecting a successful dissemination of content online, it may be useful to discuss this issue in more detail. J.B. Thompson does not actually identify the factors that help or hamper online dissemination, but on the basis of Thompson's speculations about different types of content, the following factors can be considered: the length of content, the need for frequent updates, searchability, presence of or possibilities for multimedia and cross-referencing, the importance of speedy

[8] The examples of nonfiction online travel notes and diaries: *A Journall with Observations on my travail... 1697,* <http://mytravail1697.blogspot.nl/>; *The Diary of Samuel Pepys***:** Daily Entries from the 17th Century London Diary, <http://www.pepysdiary.com> **(**Accessed 15 June 2014).

[9] L. Bennett, *E-book Strategies: The Essential ALPSP Guide on How to Develop Your E-book Offer*, (ALPSP, 2011), p. 78.

dissemination, availability and accessibility from different locations, etc. For all types of content, these factors or characteristics can be of much or little relevance; however, the success of every type of content in being disseminated online is determined by a particular set of such factors. Thus, the subfield of academic books or monographs may be presented as 1) long; 2) with medium or high importance of speedy dissemination; and 3) having cross-referencing and searchability, regular updates (especially important for SMT monographs) and 24/7 availability and easy accessibility from different places; 5) while the presence of multimedia may be an extra feature.

Thompson's classification of different types of content[10], although written in 2005, is still applicable today. However, some remarks should be made. By entering the world of digital dissemination, a publisher takes a risky move if it deals with educational (= pedagogical knowledge), scholarly (=sustained argument) and trade publications (=narrative).[11] It can be useful to scrutinise Thompson's conclusions about these three types of content on relevance for the present-day situation. It is still true nowadays that narrative (= trade) publications are unlikely to be consumed online, but for a different reason: with the advent of new generations of e-readers, they are read mainly on the dedicated devices, and later on tablets, but not while sitting in front of the screen of a laptop or a PC (the growing sales of trade e-books – fiction or non-fiction – as well as sales of e-readers and tablets serve as an evidence of it). Thus, narrative content has fairly easily transitioned to the new medium of e-readers and tablets and received the new form of e-book, delivered in different formats. Roughly speaking, an e-book is a self-contained system that can work independently without using the Internet after being downloaded if this functionality is provided by publishers. As for educational publishing, it has developed a new product – the e-textbook – enhanced by new possibilities for distance learning and other educational features, made possible because of the embedded multimedia.

Academic publishing, which include academic journals, academic monographs and books as well reference works and primary sources, is making its move into a digital realm too. Transferring journals into e-journals does not require much explanation: this 'shift to online

[10] In this paper, the forms and types of content are interchangeable.

[11] J.B. Thompson, *Books in the Digital Age*, (Polity Press, 2011), pp. 321-329.

dissemination has been quick, dramatic and irreversible',[12] and the burgeoning number of e-journals, to a large extent, speaks for itself. Reference and primary sources are also available online and are in great demand. For instance, Macmillan's decision to stop printing paper dictionaries 'was based on a choice that had been made by their users'[13] as there has been a constant decline in sales of paper dictionaries but the usage of the online dictionaries was on the rise. The greater issue is with making academic monographs and books available online or digitally as an e-book. First of all, publishers still face a great challenge from the academic community, as its general preference for paper books over e-books is still high, with some difference between the disciplines. This is connected to the nature of academic work: reading an academic book implies reading in-depth and intensively. Reading online while scrolling down a web page does not work with long articles, not to mention academic books. Also, note making, bookmarking, dog-earing, highlighting and underlining some parts of the text may be needed – a function that the HTML format cannot satisfy at the moment. In this case, the only solution is to follow trade publishing and to convert academic books into e-books – a means that, in most cases, can offer a solution for academic needs because various e-book formats can offer support for annotations or for other functionalities scholars need.

Academic work and its relationship with reading devices and formats

The nature of reading for academic purposes (for short this type of reading will be referred as 'academic reading') is different from everyday reading or reading for pleasure (fiction still constituted approximately 70 per cent of all e-books sales in 2010[14]). According to S. Schomisch *et al*[15], everyday reading can be seen as a consumptive activity, while scholarly reading is productive, as such reading is done not only for the sake of reading but in order to produce something new (a new text, knowledge, etc.). In the former case, any device used for reading

[12] J.B. Thompson, *Books in the Digital Age*, (Polity Press, 2011), p. 329.

[13] 'Why has Macmillan Stopped Printing Dictionaries?' August 2013 <http://mec.helpserve.com/Knowledgebase/Article/View/1059/0/why-has-macmillan-stopped-printing-dictionaries> (Accessed 15 June 2014)

[14] L. Bennett, *E-book Strategies: The Essential ALPSP Guide on How to Develop Your E-book Offer*, (ALPSP, 2011), p. 138.

[15] S. Schomisch *et al*, 'Are E-readers Suitable Tools for Scholarly Work? Results from a User Test', *Online Information Review*, Vol. 37(3) (2013), pp. 391-392.

should be able to support linear texts, but for academic needs the capabilities of such a device should go much further: from archiving to rereading and extracting and much more. It should be noted that there have been numerous research projects aiming at shedding some light on usability and functionality of different devices and consumers' attitudes toward a particular device. However, not much research has been done on their suitability for academic work. For instance, to my knowledge, there has been no research conducted on using smartphones for academic reading.

Nowadays reading can be done on several types of devices: laptops, PCs, dedicated e-readers, tablets and smartphones, the suitability of which for academic reading will be discussed in the rest of the section. The question is whether they are suitable for academic reading and which format is preferred by scholars. All in all, there is some evidence that, between books in PDF and ePub, the latter would be the favoured only in terms of readability of textual information,[16] meaning its adjustment to everyday reading. The limitations and capabilities of formats will be addressed in more detail in the following chapter.

As the research conducted by M. Pölönen *et al* showed, watching motion scenes or viewing content with fewer details (like images with little text) on near-to-eye or small-sized displays does not seem to cause any problems for the users, but using the same displays for reading is likely to cause eyestrain, especially when reading lasts more than 20 min.[17] Although this research is device-dependent and the results for specific devices may vary, it can be concluded that reading on devices with small-sized screens is not the most comfortable or most suitable means of continuous, long-session, in-depth reading, meaning that it is unsuited for reading, especially for academic purposes. The format 'tailored' for reading on such devices is ePub, and here we can also assume that ePub is an appropriate format for reading trade books for the same reasons. It is usually forgotten that the IDPF (the International Digital Publishing Forum, a non-profit organisation responsible for the development of ePub) began in trade

[16] S. Schomisch *et al*, 'Are E-readers Suitable Tools for Scholarly Work? Results from a User Test', *Online Information Review*, Vol. 37(3) (2013), p. 397.
[17] M. Pölönen *et al*, 'Reading E-books on a Near-to-Eye Display: Comparison between a Small-Sized Multimedia Display and a Hard Copy', *Displays*, Vol. 33 (2012), p. 166.

publishing, which was reflected in the functionality of former versions of ePub.[18] In the following chapter, the connection between ePub and trade reading will be described in detail.

The next device under examination, which supports reflowable (i.e. a type of a digital format that can adjust its presentation to a particular output device) and fixed-layout formats, is the dedicated e-reader. Again, any research conducted into dedicated e-readers will be device-dependent as there can be differences in the implementation of certain functions on devices or in the formats supported.[19] S. Schomisch *et al*[20] tested three dedicated e-readers and one tablet for their suitability to academic use by examining basic functionalities, which support active examination of the text while reading. Although their findings cannot be considered final due to the small sample scale and scope of the tested devices, the conclusions are telling. Most of the group does not use e-books for intensive reading but instead prints out the most important parts from them. In addition, the functionalities and usability of the tested e-readers proved to be neither sufficient nor suitable for scholarly work. The same study on the dedicated e-readers showed that they cannot really compete with all-purpose devices such as PCs, tablets or notebooks. A different study, conducted in 2010 by M. Aaltonen[21] *et al*, showed that most of the respondents would use e-readers for reading a novel (reading for leisure) and consider them unsuitable for academic papers with complicated layout, with laptops being still preferred due to their better functionality. Another study conducted by the digital education team at Barnes & Noble on finding an optimal digital study device showed that the best device at the moment is the laptop, which can be used for heavy studying and content parsing, with tablets being used 'as an on-the-go solution for reading and annotation'.[22]

Due to their bigger screens, tablets can offer a more comfortable reading experience for the user than smaller devices. In addition, their annotation capacities are clearly superior. For

[18] B. Kasdorf, 'EPub 3 (Not Your Father's ePub): Opening Pandora's Box in the World of E-books', *Information Standards Quarterly*, Vol. 23(2) (2011), p. 7.
[19] S. Schomisch *et al*, 'Are E-readers Suitable Tools for Scholarly Work? Results from a User Test', *Online Information Review*, Vol. 37(3) (2013), p. 395.
[20] Ibid., pp. 391-392.
[21] M. Aaltonen *et al*, 'Usability and Compatibility of E-book Readers in an Academic Environment: A Collaborative Study', *IFLA Journal*, Vol. 37(1) (2011), pp. 16-27.
[22] D. McCarthy, 'Mobile Perspectives on E-books. E-Reading: The Transition in Higher Education', EDUCAUSE Review, March/April 2011, p. 22.

instance, there are special applications for PDF e-books (such as GoodReader, iAnnotate) which enable users to highlight in different colours, inserting blank pages in PDF files for making notes on them, and so on. Although a detailed discussion of their user-friendliness is beyond the scope of the study, it is obvious that they can offer more extended opportunities for scholarly work than dedicated e-readers or small-screen devices. To summarize, at the moment devices with bigger screens and greater functionality (such as laptops and tablets) seem to be more acceptable in the academic environment.

Which e-book format is dominant?

In order to become 'e', paper books have to be converted into a suitable e-format. A range of formats and standards is available: from open and free to proprietary. It is not so easy to say which are the most widespread formats for e-books. Some consider ePub the most common format for electronic books,[23] and quite often these claims have no argumentation behind them. In this regard, given the absence of comprehensive and reliable statistics on format coverage, an interesting attempt was made by D. Johnson to use Google to check the presence of formats on the web in a very simple but effective way, by conducting searches for file types. Although there are some limitations to this approach (the exclusion of HTML and HTM files, which represent the vast majority of files on the Internet; changes in search algorithms, etc.), the results are worth mentioning here (Fig. 2[24]). The most striking feature is the absolute dominance of PDF files and the absence of ePub until 2014, when this format registered only 1.4 per cent of all file types.[25]

[23] P.K. Ryan, *Careers in Electronic Publishing*, (Rosen Classroom, 2014), p. 59.

[24] The figure is taken from: D. Johnson, 'The 8 most Popular Document Formats on the Web', February 17, 2014, n.pag. <http://duff-johnson.com/2014/02/17/the-8-most-popular-document-formats-on-the-web/> (Accessed 15 June 2014).

[25] D. Johnson, 'The 8 most Popular Document Formats on the Web', February 17, 2014, n.pag. <http://duff-johnson.com/2014/02/17/the-8-most-popular-document-formats-on-the-web/> (Accessed 15 June 2014).

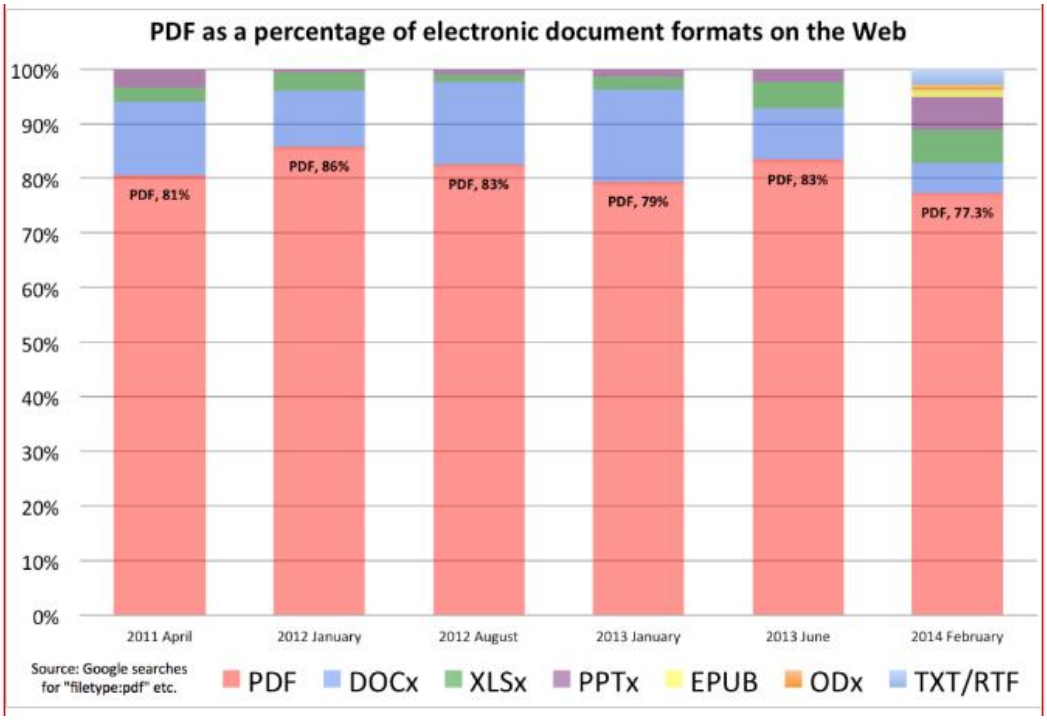

Figure 2. Percentage of electronic formats on the Internet (April 2011 - February 2014)

The results of Johnson's study are more intriguing if they are compared to the results of survey reports on digital book publishing conducted by the Association of American University Presses since 2009. The table (Table 1) below should be treated with care because the number of participants and the types of presses in the survey differed each year, thus it cannot be considered as absolute and comprehensive and not all the formats in the survey are presented here; some formats have since come and others have since gone. Moreover, although presses can produce e-books in different formats, no record is made of the percentage of e-book production covered by a single format, meaning that even if less than one per cent of books published by a particular press is made in ePub, this percentage will be counted. However, some trends can be seen: firstly, PDF is still the most widely used format; secondly, if PDF is not the only format offered by publishers, they are still not eager to take many risks (surprisingly, ePub3 has not made any great progress since 2013, although it was launched in 2011 – only three new publishers decided to use it in 2014).

Table 1. # and % of presses which make content available in different formats, 2009-2014

Format/Year	2009-2010[26]	2011[27]	2012[28]	2013[29]	2014[30]
PDF	55 (96.5%)	55 (77%)	74 (94%)	75 (100%)	71 (97%)
EPUB	17 (29.8%)	45 (63%)	69 (87%)	65 (87%)	68 (93%)
EPUB3	-	-	-	12 (16%)	15 (20%)
PRC/AZW (Kindle)	18 (31.6%)	42 (59%)	39 (49%)	24 (32%)	34 (47%)
MOBI	8 (14%)	19 (27%)	39 (49%)	41 (55%)	47 (64%)
XML	3 (5%)	14 (20%)	14 (18%)	9 (12%)*	13 (18%)*
HTML/XHTML	1 (1.7%)	9 (13%)	9 (11%)	6 (6%)	11 (15%)
DAISY	1 (1.7%)	4 (6%)	5 (6%)	2 (3%)	4 (5%)

* XML (other than ePub)

In this regard, the statement that ePub and PDF 'are rapidly becoming the main ones that academic publishers use'[31] seems inaccurate because, based on my observation and the information presented above, I would claim that ePub has been adopted mainly in trade publishing, while 'serious' academic publishing tends to choose PDF in line with the preferences of academic libraries. All in all, it looks like it is too early to claim that ePub is one of the most common formats for academic e-books, although PDF certainly is. For instance, Cambridge University Press offers its books only in PDF for institutional access,[32] although it does not rule out that its third-party distributors will offer e-books in other formats.

[26] *Digital Book Publishing Strategies in the AAUP Community: Winter 2009-2010*, p. 3.

[27] *Digital Book Publishing Strategies in the AAUP Community: Spring 2011*, p. 4.

[28] *Digital Book Publishing Strategies in the AAUP Community: Spring 2012*, p. 6.

[29] Digital Book Publishing Strategies in the AAUP Community: Spring 2013, p. 6.

[30] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 6.

[31] L. Bennett, *E-book Strategies: The Essential ALPSP Guide on How to Develop Your E-book Offer*, (ALPSP, 2011), p. 2.

[32] FAQ: About Cambridge Books Online, n.pag. <http://ebooks.cambridge.org/faq.jsf?pageTitle=FAQ> (Accessed 29 July 2014).

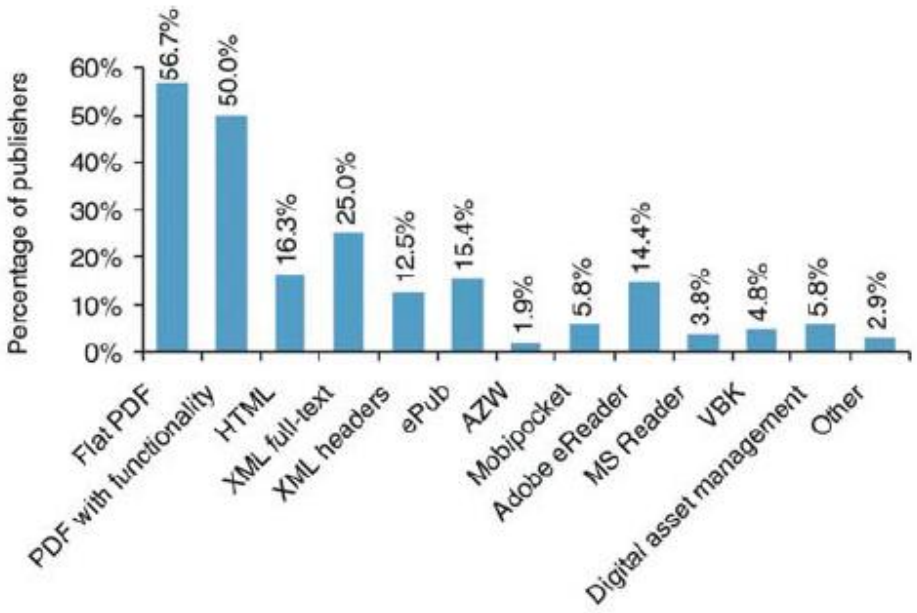

Figure 3. E-book formats created

In addition, some data concerning e-book formats (Fig. 3[33]) has emerged from a comprehensive survey of academic book publishers' policies and practices conducted by the ALPSP in 2009. The extent to which the results of this report are still plausible and relevant in the present situation of a rapidly changing digital world is difficult to say, but at least they do give an overview of the recent past and be used as a reference point. Moreover, they do not contradict the above-mentioned surveys.

EPub: a choice between a reflowable and fixed-layout format

The choice of a format is determined by different factors (target readership and possible use of a product, devices or platforms through which it should be delivered [distribution channels], possibilities of a publisher to produce a particular format); however, it also depends on the content type it should deliver. Thus, it may be assumed that most trade fiction books are text-oriented but lack a sophisticated page layout, images or passages in different languages and complicated tables and formulas. Where this is the case, the preferred format for such books

[33] J. Cox *et al*, *Scholarly Book Publishing Practice: An ALPSP Survey of Academic Book Publishers' Policies and Practices*, First Survey, (ALPSP, 2009), p. 40.

may be ePub. EPub, 'unlike print books or PDF files, is designed to change'[34] meaning that it allows content to become reflowable and malleable: any text will be adjusted for a particular display or a given reader's needs; the size of the display is not a factor. Thus, the format specification makes reading possible on even small devices (as mobile phones or smartphones) with tiny screens. In its turn, mobile reading has an advantage which may also be considered a disadvantage from a different perspective: it usually implies reading on the way (while commuting or waiting for someone). This type of reading can be characterised as discontinuous, extensive, lacking depth, and often accompanied by scanning or skimming over the reading material. To familiarise oneself with something while in transit or to use a small-screen mobile device for a quick reference or refreshing some facts, mobile reading (in case if this information is easily discoverable) is an ideal invention at the moment. In this regard, quite telling are the results of a study on e-book usage conducted by B.L. Folb *et al*: most users reported using an e-book for reference purposes regardless of whether this e-book was published as a textbook, reference source or any other type.[35]

When a sophisticated page layout is involved – with images, tables and formulas – ePub is available to the publisher in its 'fixed' variant (Kindle, Apple and Sony formats have a similar functionality[36]). In this case, every page is treated as a separate unit and text is reflowable within page boundaries. This hinders visualisation of the content and can hamper reading. Its limitations are that it may not be optimized for all e-readers and then it works in a way similar to PDF files where you can zoom in to or out of a page. On the other hand, Bedford e-Book to Go offers PDF-based e-books with an extended compatibility with Apple mobile and Android devices[37] (beyond that of Bedford's usual e-books). Fixed ePub is a part of the ePub2 standard which, at present, is not supported by all e-readers (the current revision of the ePub standard is ePub3). It is particularly interesting to point out the practice that, not a reader, but 'De Gruyter

[34] EPUB 3 Fixed-Layout Documents: Purpose and Scope <http://www.idpf.org/epub/fxl/> (Accessed 15 June 2014).
[35] B.L. Folb *et al*, 'Clinical and Academic Use of Electronic and Print Books: The Health Sciences Library System E-book Study at the University of Pittsburgh', *Journal of the Medical Library Association*, Vol. 99(3) (July 2011), p. 220.
[36] EPUB 3 Fixed-Layout Documents: Appendix B. Mapping Tables <http://www.idpf.org/epub/fxl/> (Accessed 15 June 2014)
[37] Compare E-books, n.pag. <http://www.macmillanhighered.com/Catalog/elearningbrowsebymediatype/eBook&cparam1=ektron&contentid=12741> (Accessed 29 July 2014).

decides what ePUB format is most suitable for each digital publication'[38] (between fixed and reflowable formats).

The idea behind ePub3 is in diametric opposition to the PDF format – 'content presentation should adapt to the user rather than the user having to adapt to a particular representation of content.'[39] The developers of ePub are aware that this cannot work for all types of content;[40] however, a fixed layout was not officially supported in the original EPUB3 specification and only in March 2012 was a new specification for e-books with a fixed layout developed.[41] That is why 'when fixed-layout content is necessary, the author's choice of mechanism will depend on many factors including desired degree of precision, file size, accessibility, etc.'[42] Thus, ePub3 offers a choice between a reflowable or pre-paginated (= fixed layout) document and then allows its structure to be defined by adding to it a landscape, portrait or auto (= no constraints) value or, in lay terms, spine orientation. After 'spread property' has been defined, page orientation can be applied locally to any part of the document when needed. By defining the page's dimensions in fixed pixel measurements for XHTML, SVG (Scalable Vector Graphics) and bitmap images, it is even possible to achieve right-to-left page progression direction for a document (usually used for Japanese manga). However, few people know that ePub 2.0.1 offers right-to-left reading because software reading systems have not supported this ability.[43]

EPub3 is a new step towards making the ePub format suitable for academic publishing. Academic books may contain passages in different scripts (like those for Arabic or Asian languages) which are read from right to left or from top to bottom, as well as a sophisticated page layout with images, tables and formulas. To reflow 'simple text' trade book in ePub is fairly

[38] FAQ ePUB: Can I Choose the Specific EPub Format? <http://www.degruyter.com/page/902#Format Wahl> (Accessed 15 June 2014)

[39] EPUB 3 Fixed-Layout Documents: Purpose and Scope, n.pag. <http://www.idpf.org/epub/fxl/> (Accessed 15 June 2014)

[40] Ibid., n.pag.

[41] *Field Guide to Fixed Layout for E-books, Version 1.1.,* ed. Cramer D., (Book Industry Study Group, September 2013), p. 12.

[42] EPUB 3 Fixed-Layout Documents: Purpose and Scope, n.pag. <http://www.idpf.org/epub/fxl/> (Accessed 15 June 2014)

[43] B. Kasdorf, 'EPub 3 (Not Your Father's ePub): Opening Pandora's Box in the World of E-books', *Information Standards Quarterly*, Vol. 23(2), 2011, p. 10.

easy, but turning an academic book into ePub may demand additional proofreading and checking of the above mentioned aspects. Initially, it was a problem of the format itself to display them in an appropriate way, and it remains to some extent. Then it became a problem of software reading systems which cannot support all the functionality. The year 2014 looks like it is marking a very important milestone in the development and wider use of ePub in academic publishing because this year several academic publishers have announced their adoption of ePub. Among them is Elsevier which 'will move its new e-books to EPUB3, becoming the first major STM publisher to commit to the latest, most advanced e-book format available';[44] the problem of compatibility of the formats will be solved as EPUB2 devices 'will "see" Elsevier's EPUB3 e-books as EPUB2 files.'[45] One month later (in May 2014), two more academic publishers made known their decision to use ePub: Wiley (ePub3) as its new standard for e-books in reflowable format (as of February 1, 2014),[46] and De Gruyter (ePub2) as a format in addition to its PDF e-books[47] (as of May 2014). It is worth noting that that none of these publishers has abandoned the production of e-books in PDF.

HTML and academic publishing

HTML, a mark-up language for creating web pages, is a format widely used in e-journals and to present news or short texts and articles online, especially for archiving and institutional access (for instance, *The Chronicle of Higher Education* offers some of its articles in full-text HTML: however, they are printable and can be listened to). In this case, it may have fairly simple or even unpretentious layout: without images, almost with no text formatting (some coloured

[44] Elsevier Embraces EPUB3 Format, Ensuring More Enriched and Interactive E-book Experience for Readers, *PRNewswire,* April 22, 2014, n.pag. <http://www.prnewswire.com/news-releases/elsevier-embraces-epub3-format-ensuring-more-enriched-and-interactive-ebook -experience-for-readers-256164711.html> (Accessed 15 June 2014)

[45] Ibid., n.pag.

[46] K. Sugeno, 'Improving the Reader Experience with EPUB 3', *Exchanges,* May 16, 2014, n.pag. <http://exchanges.wiley.com/blog/2014/05/16/improving-the-reader-experience-with-epub-3/> (Accessed 15 June 2014)

[47] ePub, n.pag. <http://www.degruyter.com/page/853> (Accessed 15 June 2014)

subheadings can be present). If the text is longer than a 'screen page'[48] at a time, it is more difficult for a reader to remember the place where one has stopped reading or found anything he may need to return to later. Absence of spatial cues on the screen, as well as of fixity of the text on the screen which is manipulated through scrolling, do not allow one to measure whether the text has been moved a sufficient distance – all of these add an additional load to the brain's visuospatial processing.[49]

In the case of HTML there is no pagination: the text is scrolled down until it ends. Sometimes the text is 'divided' into pages, and a user needs to click a page button to move further. Absence of an annotation functionality and bookmarking (an article can be bookmarked but not the place you are reading) does not make it very 'scholarly friendly' either. Inability to annotate texts is 'an odd quirk of digital content distribution, since the potential for capturing and sharing annotations in a digital environment make notations potentially so much more valuable'.[50] There have been some attempts to bring annotations to web browsers since 1993 when the web browser Mosaic was released; however, after commercialisation of it as Netscape, annotating was 'relegated to the back-burner of nice-to-have Web services'.[51] Other attempts as in case with Third Voice (launched in 1999) or Fleck.com (aired in 2005), for a number of reasons, failed as well. As for the present day, for instance, Opera 23.0 has a built-in Foxit Reader Plug-in for managing PDF files. A PDF file can be highlighted, or comments can be left while working with the file in the web browser and after finishing all the annotation work it can be downloaded and all the changes will be preserved in the downloaded file. The usefulness of this plug-in is not obvious because it is unclear why one should use this plug-in to work online while a file can be downloaded to work with it offline.

Whether it is possible to develop a site on which users can bookmark fragments of text in HTML is another story, but at the moment the common practice is that the sites on the

[48] i.e. a text which is longer than a user's screen can display at a time and which needs scrolling further for reading till the end.

[49] E. Wästlund, *Experimental Studies of Human: Computer Relations: Working Memory and Mental Workload in Complex Cognition*, (2007), pp. 7-40.

[50] T.A. Carpenter, 'iAnnotate - Whatever Happened to the Web as an Annotation System?', *The Scholarly Kitchen*, April 30, 2013, n.pag. <http://scholarlykitchen.sspnet.org/2013/04/30/iannotate-whatever-happened-to-the-web-as-an-annotation-system/> (Accessed 6 April 2014).

[51] Ibid., n.pag.

Internet do not offer this function regardless a rendering medium, i.e. a web-browser. The absence of appropriate annotating tools was even listed as one of the 'reasons for persistence of the PDF'.[52] The only alternative is to use different plug-ins installed on the browser, which will partially serve as a substitute to paper annotating. In this regard, remarkable and timely is the decision of Elsevier to acquire Mendeley in 2013.[53] This desktop, web and mobile programme for managing and sharing research papers and collaborating online serves also as a PDF viewer where sticky notes, text highlighting and full-screen reading are at readers' disposal. Whatever the objectives of acquiring Mendeley (much is speculated about improving Elsevier's reputation[54] or getting data from Mendeley's users' searching and sharing[55]), it is likely that publishing will be more and more involved with digital services and products, other than electronic replicas of paper books, in the nearest future, for instance by providing semantic enrichment of content and facilitating the discoverability of information through semantic tagging which will show the relevance of the surrounding context to a particular query when a key word is found.

Printing a web page is an easy thing, but the results can hardly satisfy users' expectations. Not all articles in HTML offer a printer-friendly version: in this case, a scholar will get an article surrounded by unnecessary information such as advertisements, links to other web sites, etc. They can be very distracting. Moreover, the layout of articles in HTML, once printed, can look very messy and not very suitable for reading because of overlaps of different parts of the web page.

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[52]Ibid., n.pag.

[53] Elsevier Acquires Mendeley, an Innovative, Cloud-based Research Management and Social Collaboration Platform, *Elsevier*, 9 April, 2013, n.pag. <http://www.elsevier.com/about/press-releases/corporate/elsevier-acquires-mendeley,-an-innovative,-cloud-based-research-management-and-social-collaboration-platform> (Accessed 15 June 2014).

[54] M. Ingram, 'The Empire Acquires The Rebel Alliance: Mendeley Users Revolt Against Elsevier Takeover', *Gigaom*, April 9, 2013, n.pag. <http://gigaom.com/2013/04/09/the-empire-acquires-the-rebel-alliance-mendeley-users-revolt-against-elsevier-takeover/> (Accessed 15 June 2014).

[55] D. Dobbs, 'When the Rebel Alliance Sells Out', *The New Yorker*, April 12, 2013, n.pag. <http://www.newyorker.com/tech/elements/when-the-rebel-alliance-sells-out> (Accessed 15 June 2014).

To conclude, it should be mentioned that reading comprehension on the screen is lower than while reading a paper book.[56] Thus, it can be suggested that online reading, as well as the HTML format that serves mostly as a medium for it, are not tailored for academic purposes to the extent that may be supposed. However, HTML is widely used for primary sources and reference works when the material is presented in 'bits'.

Interdependence between e-book formats and content types

To present the conclusions made in previous sections, we will return to J.B. Thompson's classification of content types one more time, which for ease of reference is reproduced here (Fig. 4[57]):

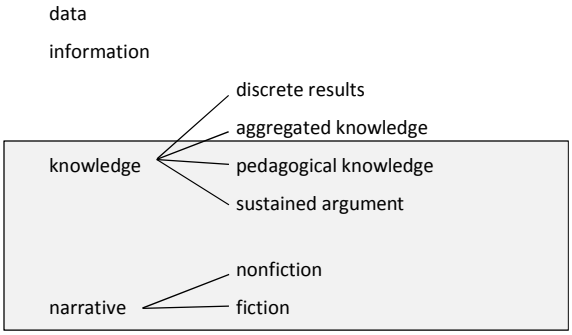

Figure 4. Forms of content

According to this classification, academic publishing deals mainly with the *sustained knowledge* form of content that should be delivered in an appropriate format. The figure shown below (Fig. 5) is a modified version of Thompson's figure of *Forms of Content* (Fig. 4) combined with his *Technologies and Types of Publishing* figure (Fig. 1). A new column of *Formats* was added. It should be mentioned that this figure does not aim to include all the types of formats used for a particular content type at the moment (for instance, .doc, .djvu). Conversely, it presents only those formats which are within the scope of this study and which seem to be better able to deliver a particular content type according to the conclusions of the study. It should be stressed that the first column deals with the formats which are used as an 'end-

[56] A. Mangen, B. R., Walgermo, K. Brønnick, 'Reading Linear Texts on Paper Versus Computer Screen', *International Journal of Educational Research*, Vol. 58 (2013), pp. 61-68.

[57] J.B. Thompson, *Books in the Digital Age*, second edition (Polity Press, 2011), p. 327.

product' (for example, nowadays many books are made in XML, which allows the creation of further different delivery formats, such as PDF and ePub). Another modification of the original figure is the remapping of the borders of content types that are less amenable to online dissemination. The content types 'pedagogical knowledge' and 'sustained argument' are still more commonly used in their paper form while for the content type 'narrative' a shift to 'e' is noticeable.

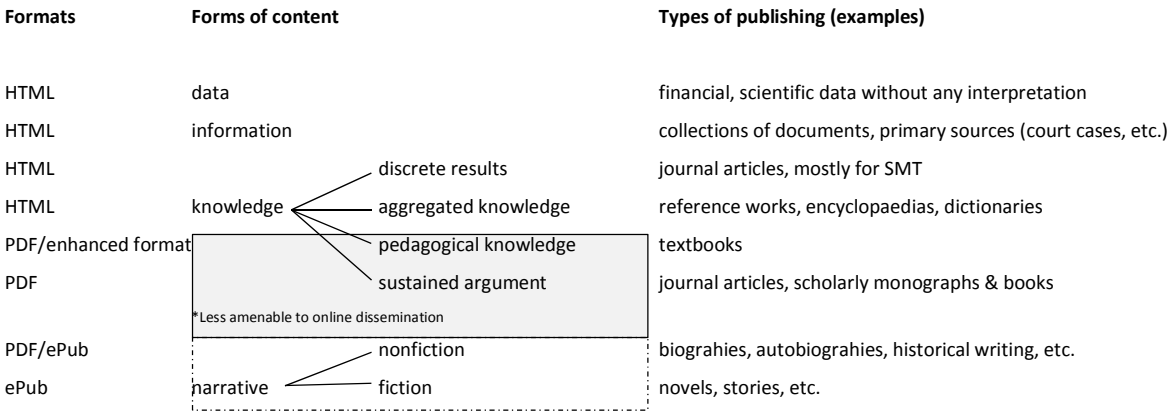

Figure 5. Forms of content and formats for their dissemination

The conclusions of this chapter will echo the message of another study on different types of content based on the ontology Functional Requirements for Bibliographical Records: no single technology or format performs well when dealing with all categories of content because of the different requirements placed on them.[58] Thus, a publisher should think carefully before adding a new format or abandoning another, as the most popular format cannot always meet the expectations of end-users and deliver a particular type of content in an adequate fashion.

To illustrate the interdependence of formats, types of content, reading devices and reading modes, the following model is useful (Fig. 6). This model should be read as follows: the choice of a format is determined by the three factors - types of content, reading devices and reading modes (in-depth or skimming reading, etc.). The advantage of this model is that it can be applied to any of the factors. For instance, by positioning 'reading device' in the centre of the triangle we can see that the choice of a reading device depends on types of content, formats and reading modes.

[58] Pettifer, S. *et al*, 'Ceci n'est pas un Hamburger: Modelling and Representing the Scholarly Article', *Learned Publishing*, Vol. 24(3) (2011), p. 214.

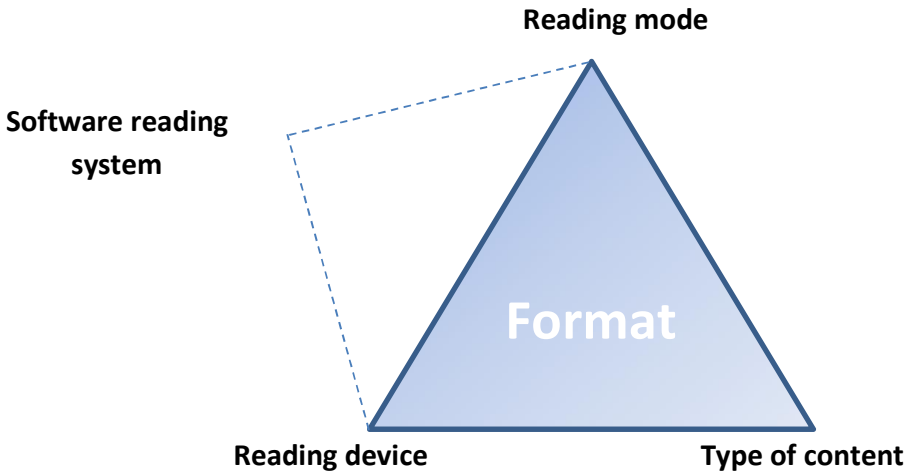

Figure 6. Model of an interdependence of formats, types of content, reading devices and reading modes

Two caveats should be mentioned: in this paper hardware issues (memory, processors, etc.) of reading devices are omitted due to the scope of the research. Thus, 'reading device' should be understood as a generic type of devices: laptops, PCs, smartphones, tablets, e-readers, etc. Secondly, although software reading systems are undoubtedly important for scholarly work (they will be discussed in the following chapter), they are quite easily interchangeable with other software reading systems, that's why they are placed on the periphery of the given model.

Chapter 2. EPub vs PDF: trade format vs academic format

Before discussing how ePub and PDF formats compete with each other in terms of functionality, some general remarks about software reading systems will be made. In this work, 'software reading systems' are understood as software programmes for PCs and laptops that enable users to read e-books in different formats such as ePub, PDF, Kindle, etc. For this research, several free software reading systems for ePub were examined (some of them support PDF files as well). In order to delimit the scope of the study, the restriction was applied to them. There are only a few software reading systems that are designed exclusively for a particular format (ePub3 Reader, for example); in many cases, one software reading system supports several formats simultaneously. For instance, FB Reader supports .epub, .fb2, .chm (stands for 'Compiled HTML', a Microsoft proprietary format). In this case, such a software reading system is treated as one which is exclusively developed for the ePub format. The second restriction is that the study was mainly limited to ePub and PDF formats as the most popular and influential; however, when applicable, some remarks are made on Kindle, and other formats are also considered. The results are based on the testing of at least two e-books for one format made by different publishers.

Software reading systems for PDF are excluded from the scope of this study because of Adobe Reader's widespread popularity (it dates back to 1993). In case of ePub – a young format first released in 2007 – many software reading systems are competing to win the field, and that is why it was important to parse them here. The table (Table 2) below presents the software reading systems organised according to the formats they support:

Table 2. Tested ePub and PDF software reading systems

Only ePub	Both ePub & PDF
Adobe Digital Editions (version 3.0.1.91394)	Calibre (version 1.41)*
FB Reader (version 0.12.10)	STDU viewer (version 1.6.313)*
ePub3 Reader for Windows 8	DL Reader for Windows 8
	Blio e-books (version 3.3.9721)
	Book HD for Windows 8
	Book Bazar Reader for Windows 8

* These are multiple format software reading systems.

Although STDU Viewer states that TIFF, PDF, DjVu, XPS, JBIG2, WWF are the most popular formats for scientific and technical documentation,[59] as far as can be seen today the main battle will be fought between ePub and PDF, and the recent decision (first half of 2014) of De Gruyter, Elsevier and Wiley to offer their titles in ePub (separately from PDF) in its attempt to break into the mobile market, supports this idea. Among the reasons for making ePub the second available format are its full-text searchability, one-file presentation (quite often a PDF e-book is downloadable chapter by chapter but not as one file), and a possibility of audio and video inclusion.[60] Some of these features will be covered in detail later, while here it will suffice to say that the choice of functions that are discussed in this study was made on the basis of the conclusions drawn in different studies on device usability, users' expectations and experience[61], as well as my own observations. Remarkably, Leiden University Library has entries about printing, copying-pasting, annotating and sharing in the Frequently Asked Questions section on e-books.[62] Thus, this chapter will explore the pagination, search and printing, annotation and bookmarking functionalities of software reading systems and their importance for the academic environment.

On the other hand, some of these issues are equally important for publishers, who have concerns about e-book paginations or search possibilities of particular formats. The overview of the functionality provided by or for e-book publishers in 2009[63] is given in the figure below (Fig. 7[64]). Not of the least importance is an issue of typographical refinement of printed books and the lack of these niceties in e-books. In addition, a newly arising development of accessible e-books will be discussed in the closing section in this chapter.

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[59] STDU Viewer, <http://www.stdutility.com/stduviewer.html> (Accessed 15 June 2014)

[60] EPub, <http://www.degruyter.com/page/853> (Accessed 15 June 2014)

[61] These studies are too numerous to list them all here; for instance, B.L. Folb *et al*, 'Clinical and Academic Use of Electronic and Print Books: The Health Sciences Library System E-book Study at the University of Pittsburgh', *Journal of the Medical Library Association*, Vol. 99(3) (July 2011), pp. 218-228.

[62] Leiden University Library: FAQ about E-books, n.pag. <http://www.library.leiden.edu/help/faq/faqs-over-ebooks.html> (Accessed 15 June 2014).

[63] To my knowledge, no recent updates on functionality are available at the moment.

[64] J. Cox *et al*, *Scholarly Book Publishing Practice: An ALPSP Survey of Academic Book Publishers' Policies and Practices*, First Survey, (ALPSP, 2009), p. 45.

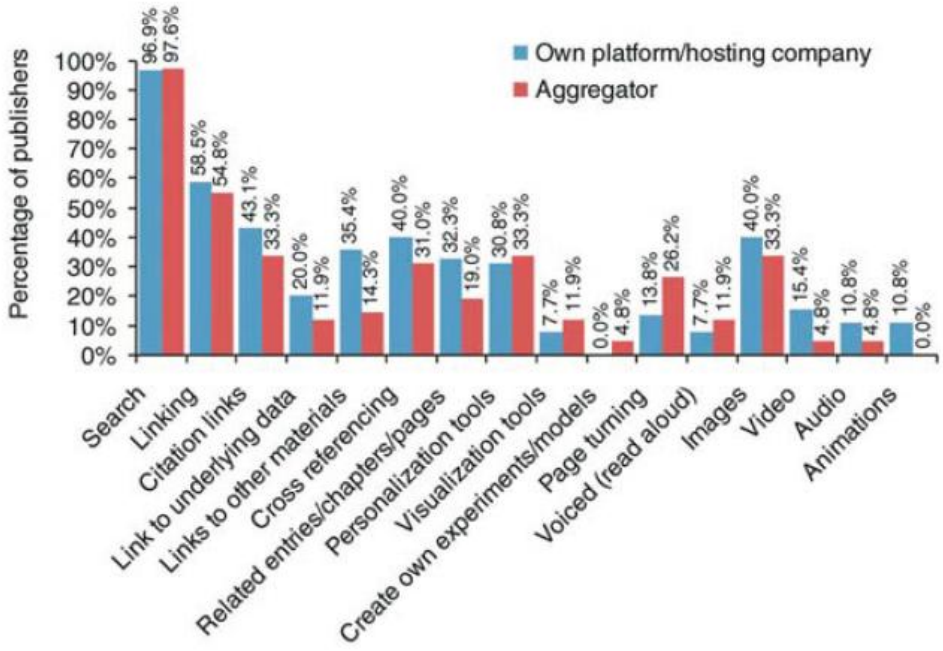

Figure 7. Functionality provided by or for e-book publishers

Pagination functionality

Reading an e-book from bigger screens such as those of e-readers and tablets seems to be viable and closer in terms of comfort to reading from paper. The dedicated devices (for instance, Kobo Reader, Nook, Sony Reader) support ePub, and it can be handy to reflow the text for every screen size. However, the layout of the same book will appear in a different way on every device (not only dedicated e-readers, tablets and mobiles but also in software reading systems for PC and laptops) because ePub is based on XHTML and CSS. This disadvantage does actually count when we deal with educational and academic books because the most important thing is pagination. For instance, if a group of students work with the same ePub book in class, it is very likely to be problematic for them to quickly find the same part in the book, because ePub do not have static page numbers: if the font is adjusted, the number of pages in the book will change. For the same reason the citation will be complicated. As David McCarthy suggests, 'the current optimal e-reading solution for higher education is a robust laptop home base with an ecosystem that interacts with tablets and e-readers for mobile consumption.'[65]

[65] D. McCarthy, 'Mobile Perspectives: On E-books. E-Reading: The Transition in Higher Education', *EDUCAUSE Review*, March/April 2011, pp. 22-24.

Until recently, PDF was the main format in which e-books were created for commercial purposes because of its relative cheapness and publishers' inability to operate XML.[66] The great advantage of PDF is the correspondence of e-pagination to the paper original, which makes PDF e-books perfectly suited for academic use (if judged by this particular criterion) where citing or referring to a particular page is essential. Adobe Digital Editions provides an opportunity to see which page is being read in ePub too (there is a special box to present the number of pages in the book and the page you are currently on). Furthermore, the page number is presented in a small font to the right of the text (in order not to distract readers' attention, as we can guess). The page number also appears for a while when a page is turned over but disappears when you are reading, for example in DL Reader, or can be shown as a percentage of total pages as in Book HD (whereas PDF files display normal pagination). Only ePub3 Reader has no pagination functionality. Despite of the availability of e-pagination in software reading systems in one form or another, it is likely that the scholarly community, quite soon, will have to work out new rules for reference and citation not only for ePub but for all digital products. In this regard, an interesting solution for referencing is offered by calibre: pagination is visible (and can even be presented as a non-integer number such as 2.2 or 5.8) but in 'Reference Mode', a number is given to each paragraph: for instance '5.2' means that this is the second paragraph of the fifth chapter/section of the book. No matter how innovative this solution is, it is unclear how a scholar would use it in one's work. On the other hand, it looks like to be particularly useful for e-books in ePub. However, if it is implemented in other software reading systems, pagination is likely to be read in a different way by various software reading systems and in all probability scholars will be forced to use the same software reading system to obtain the same pagination results.

Search and printing functionality

One of the best-known features of ePub are its possibilities for searching within a document (possible in PDF as well), and some software reading systems offer even more: searching outside the document with the help of Google for instance. However, three of the software

[66] L. Bennett, *E-book Strategies: The Essential ALPSP Guide on How to Develop Your E-book Offer*, (ALPSP, 2011), p. 2.

reading systems tested – namely ePub3 Reader, DL Reader and Book HD – do not offer any search function: taking into consideration the fact that the latter two support both formats, it can be assumed that these are the limitations of the particular software reading systems than of the formats themselves. On the other hand, the current search functions of ePub cannot be considered to be superior to those of PDF because the days of making PDF files as static scanned images are gone and PDF is produced in XML; older images need to be rekeyed in order to be made full-text searchable.

Another very useful function of PDF files is that of printing out the document. The culture of the academic community and the larger general reading community is still connected to the printed 'object'; even when a book is delivered electronically, many prefer to print out the document for in-depth, thorough reading, and the print function is evaluated as (very) important in scholarly work.[67] Besides all, the PDF format contributes to our notion of a real 'book' because its layout resembles paper books so much. EPub books as a new medium, quite oppositely, may be felt to be alien, though this feeling is unlikely to be shared by following generations of digital natives, for they will not be subjected to paper reading to the same extent as previous generations used to be.

The print function, so natural for PDF files (as is PDF's ability to print out the file with your comments either in the same position as you entered them or as a list or summary[68]), is for some reason not always present in ePub software reading systems (among those that were tested, it was only present in Adobe Digital Editions, calibre, , and STDU viewer; the latter two support many formats beside ePub and PDF; Kindle for PC does not allow printing either). This seems to suggest that ePub, perhaps not intentionally, has itself cut off from a large group of academic users. It is important to note that dedicated e-readers do not allow printing either. Printing from tablets is technically possible but this function can be missing from the particular reading software system installed on it. Even if this is the case, printing is still possible but takes more time and persistence – it can usually be done via copy & paste or by making screenshots.

[67] S. Schomisch *et al*, 'Are E-readers Suitable Tools for Scholarly Work? Results from a User Test', *Online Information Review*, Vol. 37(3) (2013), p. 399.
[68] Adobe Reader XI: Help and Tutorials, p. 8.

Annotation and bookmarking functionality

As Todd Carpenter puts it,

> Readers and researchers were annotating texts long before the invention of the printing press. While annotating texts has been relatively easy for centuries thanks to the margins of paper texts, annotating digital items remains difficult.[69]

PDF is usually available via Adobe Reader, which in most cases is already installed on one's PC or laptop and does not require additional software installation to deal with e-books as ePub does. It can be used for all PDF files and not just for e-books using PDF: the two are in fact the same. It offers annotation functions, such as highlighting, strikethrough (for Adobe Reader XI), note making and even copying and pasting into .doc or other documents[70]: it does not allow for bookmarking.

Annotation possibilities for software reading systems for ePub are very limited: for instance, DL Reader and Book HD offer only bookmarking but no highlighting, strikethrough or note taking, nor printing or copying. As for mobile applications, Aldiko for instance provides highlighting and note taking for ePub (but not for PDF – while it supports both formats) only for its premium customers. However, ePub3 is going to offer to academic publishers 'improved viewing of footnotes, citation, and references – click on or hover over a reference and the reference pops up instead of taking you away from the page to the location of the reference.'[71]

No less surprising is the absence of the copy-paste function in some software reading systems (for example in the cases of Book HD, FB Reader, DL Reader, and in Kindle for PC too). As the two software reading systems mentioned above support both formats, it can be assumed that ePub could be the reason why this function has not been implemented in them. If so, this is

[69] T.A. Carpenter, 'iAnnotate - Whatever Happened to the Web as an Annotation System?', *The Scholarly Kitchen*, April 30, 2013, n.pag. <http://scholarlykitchen.sspnet.org/2013/04/30/iannotate-whatever-happened-to-the-web-as-an-annotation-system/> (Accessed 6 April 2014).

[70] Adobe Reader, version XI and X, was used.

[71] Elsevier Embraces EPUB3 Format, Ensuring More Enriched and Interactive e-book Experience for Readers, April 22, 2014, *PRNewswire* <http://www.prnewswire.com/news-releases/elsevier-embraces-epub3-format-ensuring-more-enriched-and-interactive-ebook -experience-for-readers-256164711.html> (Accessed 15 June 2014)

another sign that this format was not initially meant for academic use; however, the absence of the copy-paste function or any restriction on the number of words for coping and pasting can be explained by the DRM restrictions introduced by publishers themselves.

Software reading systems for academic work

Among all tested software reading systems, calibre looks like the most powerful tool for managing one's e-book collection, as it offers conversion into other formats (of many input formats to many output formats; among them are: DJVU, DOCX, ePub, FB2, HTML, TXT, LRF, MOBI, PDF) and editing e-books (for ePub and AZW3 [Kindle] formats), mostly when it is needed as a result of a bad conversion. This 'free and open source e-book library management application developed by users of e-books for users of e-books'[72] is in fact meant for advanced users because its editing tools work on the HTML and CSS level and it is not convenient for a regular user to dive so deep into the structure of the document when only simple highlighting is needed. However, calibre provides all the same possibilities of formatting as word processors: changes of fonts, font sizes, italicization, bolding and many others, and even 'beautifying current file' which is 'used to auto-format all HTML and CSS files so that they "look pretty". The code is auto-indented so that it lines up nicely, blank lines are inserted where appropriate and so on.'[73] In terms of typographical aesthetics this function is very handy and thought-out, not to say innovative.

Among tested software reading systems, one is claimed to be particularly developed for academic purposes – STDU Viewer (Scientific and Technical Documentation Utility). The aim of this multilingual and multiformat viewer is 'to replace the multiple document viewers with a single one simple application'[74] (it supports TIFF, PDF, DjVu, XPS, JBIG2, WWF, Comic Book Archive (CBR or CBZ), etc.). Apart from a wide range of functions, it offers a neat solution for searching within a document in three different modes (for example, search by matching the case). Unlike other readers, it does not just jump from one hit to the next within the document but displays a list of results. Also, it offers a useful function to work with several documents

[72] About calibre, <http://calibre-ebook.com/about> (Accessed 15 June 2014)
[73] calibre Manual, <http://manual.calibre-ebook.com/edit.html#beautifying-files> (Accessed 15 June 2014)
[74] STDU Viewer, <http://www.stdutility.com/stduviewer.html> (Accessed 15 June 2014)

simultaneously. It allows for selecting images and texts within documents and exporting them to a text or an image. Rotating the document, thumbnailing and zooming with the help of a selected rectangular are other useful functions. All in all, this high functionality enables STDU Viewer to compete with Adobe Reader and makes it suitable for academic work.

EPub as a format for academic e-book

Speaking of the battle between formats, it is useful to refer to the recent study on the interoperability of e-book formats issued by the European and International Booksellers Federation in 2013. In their search for a common platform-independent e-book format standard, ePub3, Amazon's KF8, Apple fixed layout ePub and Apple .ibooks were discussed. Their choice of formats for the study was predetermined by the assumption that these are 'the major players in the e-book market using proprietary book formats.'[75] However, even being aware of the fact that national libraries and other cultural heritage institutions do not use propriety formats for storing e-books[76], not a single note was made why all other free formats were excluded from the study. Another issue with this study that should be mentioned here is the excluding of academic books from the consideration. Being a text-centric e-book format, EPUB 2.0.1 was upgraded to ePub3 to handle graphic-centred books like cookbooks or children's books[77], comics and magazines.[78] It is indisputable that this type of book is a good example of a graphic-oriented product, but academic books demand more than just the possibility of being presented on devices with different screen sizes: to consider this study comprehensive, the issues of specifications for annotations and some other features important for academic use should have been discussed there as well.

The results of the study on the interoperability of e-book formats showed that 'there is no technical or functional reason not to use and establish EPUB 3 as an/the interoperable (open) e-book format standard'[79] except for one short-term obstacle of the non-availability of

[75] C. Bläsi, F. Rothlauf, *On the Interoperability of E-book Formats*, (European and International Booksellers Federation, April 2013), p. 11.
[76] Ibid., p. 49.
[77] Ibid., p. 13.
[78] Ibid., p. 35.
[79] Ibid., p. 8.

reader applications to display all ePub3 features. Although the limitations of EPUB 2.0.1 (limited support of multimedia and interactivity that include specifications for annotations and linking in e-books[80]) have been addressed by ePub3, the study on software reading systems presented above showed that these limitations have not been overcome to make even ePub3 suitable enough for the academic use. Moreover, the functionality of creating indexes is still not available in ePub3.

To sum up, the overview of the functions available in software reading systems is presented in Table 3 below.[81] Adobe Reader was placed first in the table because it is better tailored to academic work and the limitations and advantages of other software reading systems are seen more clearly when compared to its high level of functionality. Thus, ePub cannot currently satisfy the needs of scholars due to inadequacies of software and the limitations of the format itself.

Table 3. An overview of the available functions in software reading systems

Software reading system	Highlighting	Making notes	Striking through	Underlining	Bookmarking	Printing	Copying	Pagination[82]	Searching within a document	Searching outside a document (in Google, Wiki, etc.)	Text-to-speech	Built-in Dictionary
Adobe Reader[83]	+	+	+	+	-	+	+	+	+	-	+	-[84]
Kindle for PC[85]	+	+	-	-	+	-	-	+	+	+	-	+
Adobe Digital Editions	+	+	-	-	+	+	+	+	+	-	-	-
FB Reader	-	-	-	-	-	-	-	+	+	-	-	-
Book Bazar	+	+	-	-	+	-	+	+	+	-	+	-

[80] Ibid., p. 13.
[81] The specifications about the versions of the tested software reading systems were presented earlier. If two versions were tested, the results are provided for the latest. Some functions such sharing, spelling checks, convergence were not included in the table as they were not in the scope of our study.
[82] Any type of pagination is considered here as sufficient.
[83] Adobe Reader XI provides many more functions for annotating than are shown in this table.
[84] Adobe Reader offers an external online dictionary for consulting.
[85] To my knowledge, Kindle for PC offers the same possibilities as Kindle PaperWhite (except for saving pages by clipping).

Reader												
ePub3 Reader	-	-	-	-	+	-	-	-	-	-	-	-
Calibre	+	-	+	+	+	+	+	+	+	+	-	+
STDU viewer	+	-	-	-	+	+	+	+	+	-	-	-
DL Reader	-	-	-	-	-	-	-	+	-	-	-	-
Blio e-books	+	+	-	-	+	-	+	+	+	+	+	+
Book HD	-	-	-	-	+[86]	-	-	+	-	-	-	-

At this point, it is natural to address the issue of why so much importance was placed on analysis of software reading systems for PCs and laptops when e-books suggest that reading will primarily be done on the dedicated devices and tablets. It is true that reading of e-books is performed on the dedicated devices and tablets, but the work with e-books, manipulations with their content and referential work, as logic suggests, is mainly done while a scholar is writing his article using a PC or laptop. On the other hand, this fact does not exclude the possibility that preliminary work (reading and making short notes) has been done on dedicated devices and tablets.

As a final note on ePub, it can be interesting to push ePub to its limits as a format by testing its applicability to deliver legal and other official documents usually presented in PDF or Microsoft Word. In this case, the importance of the same e-pagination in all versions of a document can be equal or even greater than in academic papers. It may be assumed that, until there is no legal precedent for accepting ePub's reflowability for this kind of content, the acceptance of ePub by the academic community will remain low or medium.

Typographical aesthetics of e-books

Another, perhaps minor, issue with e-book formats is typographical aesthetics. One may question the relevance of the concept of beautiful typography for academic publishing but it is undoubtedly of importance because books have always been a representation of status and

[86] Bookmarking is not supported with PDF files.

authority. Moreover, they have been a reliable medium for knowledge dissemination and thus they should present this knowledge in a proper way. The more professionally it is presented (no typos; clear and legible but simple design, etc.), the more value it gains. Conversely, the value of content itself can be questioned: if a book looks like it was compiled by a group of amateurs, this assumption about amateurism will be automatically ascribed to its content.

When the same ePub file is open in different software reading systems (it may be the case for e-readers, tablets, mobiles), an issue with the text positioning on the page can arise: the lines can be mixed up or overlay each other, there can be blank pages present, and even if the text is displayed correctly on the page, the typography may look unattractive, messy, and chaotic.[87] Apart from the 'purely' aesthetic function, badly laid out e-books hinder the reading experience. This can be a temporary problem as it may depend on the quality of an ePub file itself or a particular software reading system. For example, PDF files are not correctly presented in calibre, while Sony e-reader has problems with fixed ePub files, with Kindle environments being criticised for their bad typography.[88] Thus, it may be assumed that at the moment ePub cannot satisfy readers' love for beautiful typography and book aesthetics to the same extent that paper books usually do.

Although as a format ePub3 is able to offer some extra possibilities for improving the aesthetics of the displayed texts with the help of 'page-break-before' or 'avoid' commands and by preventing 'orphans', 'widows' and automatic hyphenation,[89] it seems to fail to satisfy the general requirements of a decent e-book at the moment, partially due to the pitfalls of reading systems, improper tagging and shortcoming of the format itself. Nevertheless, e-readers representation of the 'ink-word' seems to be more aesthetically and authentically 'right' in general. From this point of view, also telling is De Gruytor's claim that

[87] The conclusions were drawn on the basis of my testing of different free software reading systems.

[88] C. Bläsi, F. Rothlauf, *On the Interoperability of E-book Formats*, (European and International Booksellers Federation, April 2013), p. 26.

[89] Ibid., p. 26.

the quality and display of De Gruyter e-books on any third party device cannot be guaranteed by De Gruyter, nor does De Gruyter warrant full functionality of De Gruyter e-books on any third party device or software specific product.[90]

Furthermore, technology made it possible for e-books to have hyperlinks in the text, which is beyond paper books' possibilities. These hyperlinks are usually blue coloured and underlined. The question of why the presentation of hyperlinks in this way took its root in the online environment is outside of the scope of this work, but the same presentation is often used in e-books. In trade e-books, hyperlinking is not as common as in academic books, so the layout is not 'violated' by this blue font against the traditional black font (Fig. 8). It may be a matter of personal taste but the presentation of hyperlinks in academic e-books may challenge the traditional layout usually used in them. No one will deny that e-books are likely to develop their own style of presentation of a written word but they should not look like text files thrust into the digital space as it happens sometimes with ePub and some other formats. In this regard, it is timely to turn to another popular format, PDF, which offers identical pagination and layout to the paper book (if a book is not digitally born). No matter which e-reader or screen is used for reading, PDF will be displayed in a standardized way – there will be no difference on different devices.

arrest this increasing emigration, devoted themselves to improving the condition of persons placed under their dependence, and attempted to create on their domains *boroughs* analogous to those of royalty. But however liberal these ameliorations might appear to be, it was difficult for the nobles not only to concede privileges equal to those emanating from the throne, but also to ensure equal protection to those they thus enfranchised. In spite of this, however, the result was that a double current of enfranchisement was established, which resulted in the daily diminution of the miserable order of serfs, and which, whilst it emancipated the lower orders, had the immediate result of giving increased weight and power to royalty, both in its own domains and in those of the nobility and their vassals.

These social revolutions did not, of course, operate suddenly, nor did they at once abolish former institutions, for we still find, that after the establishment of communities and corporations, several orders of servitude remained.

At the close of the thirteenth century, on the authority of Philippe de Beaumanoir, the celebrated editor of "Coutumes de Beauvoisis," there were three states or orders amongst the laity, namely, the nobleman (Fig. 29), the free man, and the serf. All noblemen were free, but all free men were not necessarily noblemen. Generally, nobility descended from the father and franchise from the mother. But according to many other customs of France, the child, as a general rule, succeeded to the lower rank of his parents. There were two orders of serfs: one rigorously held in the absolute dependence of his lord, to such a degree that the latter could appropriate during his life, or after death if he chose, all he possessed; he could imprison him, ill-treat him as he thought proper, without having to answer to any one but God; the other, though held equally in bondage, was more liberally treated, for "unless he was guilty of some evil doing, the lord could ask of him nothing during his life but the fees, rents, or Taxes which he owed on account of his servitude." If one of the latter class of serfs married a free woman, everything which he possessed became the property of his lord. The same was the case when he died, for he could not transmit any of his goods to his children, and was only allowed to dispose by will of a sum of about five sous, or about twenty-five francs of modern money.

As early as the fourteenth century, serfdom or servitude no longer existed except in "mortmain," [29] which we still have to speak.

The Court of Mary of Anjou, Wife of Charles VII.

Her chaplain the learned Robert Blondel presents her with the allegorical Treatise of the "*Twelve Perils of Hell*." Which he composed for her (1459). Fac-simile of a miniature from this work. Bibl. de l'Arsenal, Paris.

Mortmain consisted of the privation of the right of freely disposing of one's person or goods. He who had not the power of going where he would, of giving or selling, of leaving by will or transferring his property, fixed or movable, as he thought best, was called a man of mortmain.

Fig. 22.–Italian Nobleman of the Fifteenth Century. From a Playing-card engraved on Copper about 1460 (Cabinet des Estampes, National Library of Paris).

This name was apparently chosen because the hand, "considered the symbol of power and the instrument of donation," was deprived of movement, paralysed, in fact struck as by death. It was also nearly in this sense, that men of the Church were also called men of mortmain, because they were equally forbidden to dispose, either in life, or by will after death, of anything belonging to them.

There were two kinds of mortmain: real and personal; one concerning land, and the other concerning the person; that is to say, land held in mortmain did not change quality, whatever might be the position of the person who occupied it, and a "man of mortmain" did not cease to suffer the inconveniences of his position on whatever land he went to establish himself.

The mortmains were generally subject to the greater share of feudal obligations formerly imposed on serfs; these were particularly to work for a certain time for their lord without receiving any wages, or else to pay him the tax when it was due, on certain definite occasions, as for example, when he married, when he gave a dower to his daughter, when he was taken prisoner of war, when he went to the Holy Land, &c., &c. What particularly characterized the condition of mortmains was, that the lords had the right to take all their goods when they died without issue, or when the children held a separate household; and that they could not dispose of anything they possessed, either by sell or gift, beyond a certain sum.

The noble who franchised mortmains, imposed on them in almost all cases very heavy conditions, consisting of fees, labours, and fines of all sorts. In fact, a mortmain person, to be free, not only required to be franchised by his own lord, but also by all the nobles on whom he was dependent, [30] well as by the sovereign. If a noble franchised without the consent of his superiors, he incurred a fine, as it was considered a dismemberment or depreciation of the fief.

As early as the end of the fourteenth century, the rigorous laws of mortmain began to fall into disuse in the provinces; though if the name began to disappear, the condition itself continued to exist. The free man, whether they belonged to the middle class or to the peasantry, were nevertheless still subject to pay fines or obligations to their lords of such a nature that they must be considered to have been practically in the same position as mortmains. In fact, this custom had been so deeply rooted into social habits by feudalism, that to make it disappear totally at the end of the eighteenth century, it required three decrees of the National Convention (July 17 and October 2, 1793; and 8 Ventôse, year II.—that is, March 2, 1794).

It is only just to state, that twelve or fourteen years earlier, Louis XVI. had done all in his power towards the same purpose, by suppressing mortmain, both real or personal, on the lands of the Crown, and personal mortmain (i.e. the right of following mortmains out of their original districts) all over the kingdom.

Fig. 23.–Alms Bag taken from some Tapestry in Orleans, Fifteenth Century.

Privileges and Rights. Feudal and Municipal.

Elements of Feudalism.—Rights of Treasure-trove, Sporting, Safe Conducts, Ransom, Disinheritance, &c.—Immunity of the Feudalists.—Dues from the Nobles to their Sovereign.—Law and University Dues.—Curious Enactments resulting from the Universal System of Dues.—Struggles to Enfranchise the Classes subjected to Dues.—Feudal Spirit and Citizen Spirit.—Resuscitation of the System of Ancient Municipalities in Italy, Germany, and France.—Municipal Institutions and Associations.—The Community.—The Middle-Class Cities (*Cités Bourgeoises*).—Origin of National Unity.

...s to understand the numerous charges, dues, and servitudes, often as quaint as iniquitous and vexatious, which weighed on the lower orders during the Middle Ages, we must

Figure 8. 'Hostile' layout[91]

[90] FAQ EPUB: What Devices Best Display the EPUB Format?, n.pag <http://www.degruyter.com/page/902#Geräte> (Accessed 15 June 2014)

EPub3 and PDF as accessible formats

Accessible computing (also known as computer accessibility) struggles to make content accessible to all people, regardless of any disability or impairment, in human-computer interaction. Accessibility is a complex notion but, roughly speaking, it should provide access to content (irrespective of its type: a video, a text) with the help of different functionalities, such as a reading aloud function for people with visual impairment. The issue of accessibility took on new impetus with the development of e-book formats.

If one delves deeply into ePub3, its two main marketing points become clear: ePub3 is aimed at mobile devices with its ability to become reflowable, and the format is promoted aggressively or at least persistently as the only accessible one. The greatest benefit of ePub3 is in making content reflowable (capable of being adjusted to screen size) and resizeable (capable of being adjusted to font size) as well as being read aloud – an opportunity for several groups of people to enjoy books, but especially those with hearing and vision challenges. For instance, 10 per cent of the population has a print disability[92] – an inability to read print effectively due to visual, physical, perceptual or other problems. Another study from the European Union has shown that 21 per cent of people over the age of 50 have serious vision, hearing, or dexterity problems, and this in the context of the general problem of an aging population.[93] All in all, a considerable part of the world's population is in need of a reliable medium for interacting with e-books.

The choice of ePub can become a matter of political correctness, and the announcement by IBM in 2014 of its decision to use ePub as 'its primary packaged portable document format'[94] 'to allow any user – including people who have speech, hearing or vision challenges – to receive a more personalized experience of "printed" content'[95] supports this idea. In the long run, it will

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[91] The screenshot is made of an e-book in ePub - P. Lacroix, *Manners, Customs and Dress during the Middle Ages and During the Renaissance Period*, (Project Gutenberg, 2004).

[92] Garrish, M., *Accessible EPUB 3*, (O'Reilly Media, Inc., 2012), p. 4.

[93] *Field Guide to Fixed Layout for E-books, Version 1.1.*, ed. Cramer D., (Book Industry Study Group, September 2013), p. 17.

[94] R. *Schwerdtfeger et al*, *Transforming the Mobile Experience: The IMB Move to EPub to Create Rich, Inclusive Content across the Enterprise*, (IDPF, 2014), p. 8.

[95] Ibid., p. 8.

be the right decision for publishers to follow this initiative. In this regard, nobody would deny the value of media overlays for text-to-speech feature of ePub (i.e. as the text is read aloud, the words are being highlighted) or implementation of PLS lexicon (Pronunciation Lexicon Specification) and SSML (Synthetic Speech Markup Language) to define pronunciation of confusing words (such as heteronyms). On the other hand, ePub3 seems to be promoted as a plaster for all sores by denying or intentionally forgetting the capabilities of other formats. For instance, a properly tagged PDF file can offer the same basic accessibility functionality (reflowability, zooming, text-to-speech) as ePub but for some reason they are being concealed.

It is true that there are certain limitations of the PDF format: although e-pages are scalable, you cannot get the whole page on the screen while zooming in – only a part of it will be visible if screen size is not big enough. With the help of Adobe Reader PDF files can be seen in different modes of zooming. The choice of zooming is not restricted to dynamic and marquee zoom; *pan & zoom* is another option that enables a reader to zoom in or out a particular piece of content that will be also seen within a selected area ('pan') on the thumbnail of the page. For people with visual impairment, the forth mode of zooming – *Loupe Tool*, which displays a part of content the user selected in an adjustable rectangle in a magnified way – can be a solution. Moreover, the page view can be adjusted in different ways, from actual size to zooming to the page level, or to resizing of the page so that its content fits the width of the window with the help of *Fit Visible*. These tools may not be an absolute substitution of ePub accessibility, but it is an alternative when a document is not available in ePub.

In all probability, only a few people remember or know of the reflow function of Adobe Reader that makes a PDF file reflowable and zoomable (i.e. the size of the text is adjusted by zooming in or out, yet not by changing the size of the font – as in ePub – rather this zooming works in the same way as ePub resizeability). In this case, every page is reflowed within page boundaries, separately from other pages. This function has been available since Adobe Acrobat 5.0 was developed in 2001, in order to accommodate readers with limited desktop space.[96] At that time, nobody would have considered using it with small screen mobile devices, because they hardly existed. Thus, the capabilities of the function were far ahead of the way the format

[96] Adobe Acrobat 5.0 Tutorials: Reflow the Contents of Adobe PDF Documents, p. 1 <http://www.adobe.com/uk/epaper/tips/acr5reflow/pdfs/acr5reflow.pdf> (Accessed 15 June 2014).

was then being used. With the development of mobile technologies, the reflow function of PDF has a new use: 'this reflow view can make the document easier to read on a mobile device or magnified on a standard monitor, without scrolling horizontally to read the text.'[97] As with every format, it has its limitations: in this mode a file cannot be saved, edited, or printed – the same failings as in ePub. Some files containing comments, digital signature fields, forms, and page artefacts (page numbers, headers, footers) are not reflowable.[98] Additionally, vertical texts will be presented horizontally.

If a user cannot read a text, *Read Out Loud* can be activated in Adobe Reader. This is another forgotten or unknown function of Adobe Reader. A user can set volume, speed, and voice pitch or even choose a voice if a choice is provided.[99] To allow full control of *Read Out Loud* – which is capable of reading comments, alternate text descriptions for images and fillable fields – a PDF file needs to be tagged properly; however, some operating systems do not support it because it is not a screen reader.[100] With the help of Adobe Reader, a PDF file can be saved as a text accessible by a braille printer; it is also compatible with assistive software and devices such as screen readers and screen magnifiers; *JAWS* (Job Access With Speech), developed for Microsoft Windows for blind and visually impaired users, and *Window-eyes* (also for Microsoft Windows) are examples.[101] Some special features to facilitate navigation and control of a file (for instance, using only a keyboard without a mouse or scrolling automatically) are available too.

To create an accessible PDF file or to verify an existing file, Adobe Acrobat Pro[102] can be used. This programme will help fix the issues of a PDF file itself but will not fix the limitations of a particular software reading system. To my knowledge, there is no tool for verification of ePub files on accessibility, and in this case, PDF accessibility looks more superior and important for publishers than all the bells and whistles of ePub. It is fair to mention that ePub files can be

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[97] Acrobat Help: Reading PDFs with Reflow and Accessibility Features, n.pag. <http://helpx.adobe.com/acrobat/using/reading-pdfs-reflow-accessibility-features.html> (Accessed 6 April 2014).
[98] Ibid., n.pag.
[99] Ibid., n.pag.
[100] Ibid., n.pag.
[101] Accessing PDF Documents with Assistive Technology: A Screen Reader User's Guide (Adobe, 2006), pp. 13-16.
[102] Acrobat Help: Create and verify PDF accessibility (Acrobat Pro), n.pag. <http://helpx.adobe.com/acrobat/using/create-verify-pdf-accessibility.html> (Accessed 6 April 2014).

validated with the help of EpubCheck[103] but it will not provide a summary of the accessibility of the file as Adobe Acrobat Pro can do.

Accessibility is a recent 'discovery' for publishers. It was only in 2013 that the Association of American University Presses included this topic into its annual survey reports on digital book publishing.[104] AAUP asked only about the interest of publishers in e-book accessibility but not about the actual implementation of accessible technology in their workflows. The results of the AAUP surveys are presented in the table[105] below (Table 4).

Table 4. Interest of presses in accessible e-books

Year/Interest	Neutral	Interested	Very interested	Don't know
2013	19	46	19	-
2014[106]	15	36	19	1

At this moment it is useful to have a look what software reading systems for ePub can offer in terms of accessibility. Resizability and reflowability are offered by all software reading systems for ePub, but only two (Book Bazar Reader and Blio e-books) among those tested have the function 'text to sound' (without media overlays). Thus, it is likely that the software reading systems have the limitations in implementing all the possibilities the ePub3 format can offer: its text-to-speech engines are at publishers' disposal; however, only about five per cent of the books produced in any year are in an accessible format,[107] with the percentage of accessible e-books is being known.

Different e-book applications, devices, and reading systems (such as Readmill 3.5, Blio 4.1, Aldiko 3.0.2) were evaluated for features supported by the IDPF EPUB 3.0 e-book file format on EPUBTest.org.[108] Thus, among 53 e-book applications, devices, and reading systems which were evaluated on this website, only 6 support highlighting (as a part of media overlay) in

[103] EpubCheck official website, <https://github.com/IDPF/epubcheck> (Accessed 6 April 2014).

[104] *Digital Book Publishing Strategies in the AAUP Community: Spring 2013*, p. 10.

[105] The numbers are not fully comparable because in 2013 the responses were provided by 84 individuals and in 2014 – by 75 presses (four presses skipped the question). Despite the limitations of this survey, some trends in perception of accessibility can be seen.

[106] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 13.

[107] Garrish, M., *Accessible EPUB 3*, (O'Reilly Media, Inc., 2012), p. 4.

[108] <http://epubtest.org/> (Accessed 6 April 2014).

reflowable ePub and 11 in fixed-layout ePub; in both cases the information about 2 reading systems was not available.

Another novelty of ePub3 is fallbacks, a feature which

> enables the specification of an alternative media element in place of one that might not be received by the e-book user, be it as a consequence of a disability or in a certain situation (e.g. with background noise).[109]

A possible example of its implementation can be the availability of an explanation text instead of a video.[110] However, no fallbacks have been detected in the tested software reading systems. Another failing in providing accessible e-books is that accessible e-books can become inaccessible after reformatting to less feature-rich formats or for feature-reduced reading.[111] All in all, it looks like there is a long way to go before e-books become truly accessible, and, to my knowledge, no academic publisher has announced a move to e-book accessibility. At the moment, only the University of Chicago Press provides the additional service of making its e-books accessible to students with print disabilities.[112] No less interesting would be to find out the degree of accessibility of other formats (for instance, .mobi, .djvu).

[109] C. Bläsi, F. Rothlauf, *On the Interoperability of E-book Formats*, (European and International Booksellers Federation, April 2013), p. 34-35.
[110] Ibid., p. 35.
[111] Garrish, M., *Accessible EPUB 3*, (O'Reilly Media, Inc., 2012), p. 2.
[112] Accessibility Information: Electronic File Requests for Students with Print Disabilities, n.pag. <http://www.press.uchicago.edu/books/accessibility.html> (Accessed 6 July 2014).

Chapter 3. Academic publishing today: e-book usage, pricing, third parties and business models, a business-to-customer paradigm

As every novelty, e-books are a challenging technology to deal with. There are many uncertainties for publishers while pursuing this moving target. In some ways, the market for academic e-books prevents publishers from much experimentation, because libraries, their main customers, are reluctant to have anything else other than e-books in PDF. For libraries, PDF has become a format that is not only used for archival purposes, but one that serves as a substitute for paper books. In this capacity, once downloaded and saved on one's hard drive, a PDF can satisfy one's need for owing an electronic book, rather than providing temporal access to it. The issue of owning an e-book will also be touched upon in the section about business models. In the ideal world, publishers should follow the market demands or even anticipate them: if the academic world is so conservative and reluctant to change, why should publishers rush into the risky waters of the digital world? Thus, if there is no demand, there is no supply. However, the revenue is still falling, and the tendency to publish more new titles with fewer numbers of copies sold is still dominant.

Despite the earlier failure in the online delivery of content in the late 1990s when millions of dollars were spent on delivery of trade books for the general consumer market, J.B. Thompson's conclusions about trade publishing that it is likely to be one of the last areas to be affected in a significant way by the online delivery[113] seems to be outdated now. What can be seen at the moment is that it is growing, while it looks like academic publishing is slowly moving towards the digital realm, experimenting with much caution and abandoning entrepreneurial spirit. However, publishers are not the only ones to blame. The confusion caused by e-books affects not only publishers but also possible consumers. The pricing models, myths about costless e-books, a life span of e-books, incompatibility of different reading devices and numerous formats will puzzle many.

The last chapter of this study will explore the main issues academic publishers have to deal with as inevitable consequences of the impact of the digital age. E-book usage data and

[113] J.B. Thompson, *Books in the Digital Age*, second edition (Polity Press, 2011), pp. 329.

emerging business models represent challenges for publishers moving into digital publishing. No less challenging is choosing the right pricing model and new allies in the digital world, i.e. third parties. The era of concentrating of all efforts onto libraries as their main customers seems to be coming to a close and publishers are looking for ways to expand sales to individual scholars. Last but not least, this study gives an overview of the current situation in the academic world and how it can affect academic publishing in the future.

E-book statistics

One of the reasons why e-books are not an easy product to handle is the difficulty in getting accurate and comprehensive sales statistics. It was relatively easy to estimate how many paper books were sold because a publisher knew how many copies had been printed: selling paper books was based on selling individual items. In the digital market, selling digital products involves many challenges. Firstly, selling is done from a digital file that can be reproduced as many times as is needed. Moreover, with the fragmentation of digital products – where selling is done at the levels of chapter, article, page, etc. – it is not yet clear how these sales should be counted. It is also significant that, of 75 presses surveyed, 6 presses could not provide any data regarding the percentages of e-book revenue in 2013 derived from various sources (retailers, aggregators, direct sales, etc.) while 11 presses skipped this question altogether.[114]

In their turn, libraries find themselves in the same difficult position because a lack of reliable usage statistics prevents them from making the best choices for distributing ever diminishing resources:

> The lack of comparable statistics leaves Acquisition Librarians confused, with no support in the renewal process, because there is no way of knowing how to compare "title" use and "page" use. It also makes it hard to establish value for money and to justify the purchases to our stakeholders. There is no way to establish a reasonable cost for an e-book download if there is no way of comparing.[115]

[114] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 4.
[115] K. Byström, 'Everything That's Wrong with E-book Statistics: A Comparison of E-book Packages', *Proceedings of the Charleston Library Conference: Accentuate the Positive*, (2012), p. 219.

This confusing situation is created by the different methods for providing information used by vendors and publishers. There is no agreement between them on how to define a 'download' or 'a view/session'. For example, Springer and Sage count chapters, while Ebrary gives statistics at page level but also includes the printing and copying of pages, since each access is rendered as a 'successful section request.'[116] Thus, it is not surprising that Ebrary's collections should seem to be in great demand or at least are shown in a more favourable light than the collections of other library suppliers. However, it looks like a form of cheating and getting the most out of libraries.

Even more confusion arises if publishers are asked to track their own books. Giving separate identifiers to paper and electronic books seems to be essential, but surprisingly this practice has yet to become established. According to the Association of American University Presses, in 2013, 39 (53%) out of 75 presses still use a single ISBN for all digital formats and only 18 (25%) use a distinct ISBN for each publisher format, 1 (1%) press uses one ISBN per vendor format and 3 (4%) presses use different ISBNs per sales channel.[117] For instance, Ashgate, De Gruyter[118] and Palgrave Macmillan are among the rare academic publishers who provide different ISBNs for PDF and ePub versions of an e-book. To my knowledge, O'Reilly Media, Inc. uses different ISBNs for paper and PDF books but its mobi and ePub versions go without any identifier. As for vendors, Kobo is a one of the distributors who usually uses different ISBNs for the PDF and ePub versions of an e-book. Thus, it is usually not the case for publishers themselves to use different ISBN for e-books in different formats, but a third party may do this for them when the production of e-books in different formats is licensed to the third party. However, tracing e-books in different formats can be a challenge even with specialised tools since, as in the case of Publisher Alley, the generalised description 'e-book' does not tell us the formats in which an e-book is available.

[116] Ibid., p. 218.

[117] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 8.

[118] FAQ EPUB: Do the Different E-book Formats have an Individual ISBN? n.pag. <http://www.degruyter.com/page/902#ISBN> (Accessed 15 June 2014)

Pricing

In June 2014, a post appeared on *The Scholarly Kitchen*[119] containing a video made by the Italian publishing house Gruppo Editorial Mauri Spagnol that should have helped to remove misconceptions about e-books' costs. As the author of the post says, 'The video gives a quick and clear explanation of the costs that go into producing a book, whether electronic or print, and how that impacts the book's price.'[120] Indeed, the video explains the main stages of e-book production in a popular way. However, as a result of simplification or intentionally, an important fact that books are still rarely produced only in one format (only in paper or only electronically) is omitted. For instance, in 2013, according to the Association of American University Presses, only 27 per cent of presses published e-only scholarly titles.[121] Thus, the video can refute the misconceptions about costless e-books but may create a new misconception about the production costs when an e-book is a 'by-product' of paper books.

E-book prices cause much confusion to both potential buyers and publishers. Until relatively recently, when e-book sales became significant enough to warrant allocating them their own bookkeeping entries, the costs of e-book production were written off as costs of producing the paper edition. Now that books are being produced as XML, different formats of e-books can be relatively easily produced. In most cases, the primary digital format is PDF, because this is the format in which the book is sent to the author for further corrections. Thus, the production of an e-book in PDF seems to be almost without cost because it is produced as part of paper book production (the costs of this conversion into PDF are difficult to estimate but they are likely to be minimal). Producing academic e-books in different formats (especially in ePub) can actually involve some rekeying and additional checks, and as a result, the costs will go up. For instance, the price for making fixed-layout ePub will be much higher than reflowable ePub. All in all, even if the budgeting for e-books is not done by publishers, e-book production does involve costs, whether or not the costs of e- and print are booked to one account and the

[119] D. Crotty, 'What is an E-book? How do Publishers Price it?', *The Scholarly Kitchen*, June 27, 2014, n.pag. <http://scholarlykitchen.sspnet.org/2014/06/27/what-is-an-ebook-how-do-publishers-price-it/> (Accessed 6 July 2014).

[120] Ibid., n.pag.

[121] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 11.

write-off of e-costs is done in proportion of e-sales to print sales. Another problem with comparing prices is the sales tax: the tax may already be included in the price (Amazon, Taylor & Francis) or may be excluded (Brill, Ashgate, Brepols), and different percentages of sales tax may be charged depending on the state or region where the sale takes place. For instance, in Europe it can reach 20 per cent of e-book price.

Academic publishers offer different pricing models for e-books. The conclusions here are based on the analysis of prices[122] posted by publishers on their online platforms but not those given by vendors, aggregators, or retailers who were excluded to limit the scope of the study. Two caveats should be made: the prices of e-books given by publishers on their web sites can differ considerably from the prices given by their retailors and aggregators, and prices are also subject to change. The price can be the same as for the paper edition. For instance, Brill, De Gruyter, and Ashgate set the same price for their e-books as for their hardcover editions but while Brepols commonly sets the same price for its e-books as for its hardcover editions, in some cases the price of an e-book can be lower or higher than for the hardcover edition (the publication of the e-book can occur several years after its appearance in print). The pricing can be equal to, or less than, the lowest-priced print edition (Rowman & Littlefield[123]). The pricing can be equal to the lowest-priced print edition (Taylor & Francis). The pricing can be roughly half of the price of the printed book (Bedford[124]). The pricing can be less than the lowest-priced print edition (Wiley). The pricing can be less than the print edition regardless of which edition is available, hardcover or paperback (Indiana University Press). The pricing can be lower than that of soft cover editions, but some irregularities may occur as ePub editions can be more expensive than soft cover editions (Penguin). These conclusions should not be considered final and absolute, because pricing strategies can change over time. For instance, during my first check, Brepols was offering two pricing options for its e-books without specifying the differences between the two versions of the e-book. It was unclear if the price was based on format or

[122] If there is no footnote above the name of the publisher, the information about pricing is not provided by the publisher on its web site or in catalogues.
[123] The Rowman & Littlefield Publishing Group Digital Catalog of European & Russian Studies 2013-2014, p. 2. Available via <http://rowman.com/Catalogs/RLEuroRussStudies2013/#/2/> (Accessed 29 July 2014).
[124] Compare E-books, n.pag. <http://www.macmillanhighered.com/Catalog/elearningbrowsebymediatype/ebook&cparam1=ektron&contentid=12741> (Accessed 29 July 2014).

some additional functionality of a particular version. However, about two months later this price difference disappeared: there were still some book records offering two versions of the same e-book but their prices were now the same.

A short remark should be made about the pricing of an e-book in different formats. As a rule, an e-book with different formats is offered within the same book record. These e-books tend to have the same ISBN and price. For instance, O'Reilly Media, Inc. usually offers up to five e-book formats (PDF, ePub, .mobi, DAISY, and Android .apk) within one book record with the same price. However, some publishers may offer an e-book in different formats with different ISBNs: this results in two book records for the e-books, though with the same price and a separate record for the print editions (Ashgate). In rare cases, a publisher explains its policies on e-book pricing:

> For both e-ISBNs there will be one consistent price. All e-book orders placed via our De Gruyter Online platform will receive access to both e-book-formats, if available, i.e. PDF and ePUB. Prices are subject to change, future price increases cannot be ruled out.[125]

At the moment it looks as if no publisher is making revenue by adding a surcharge for making an e-book available in more than one format. All the formats have the same pricing. However, Kobo's website produced several cases of different pricings for ePub and PDF (Fig. 8), and the price for ePub was higher than for PDF. In general, Kobo's e-book prices tend to be similar to the latest edition of a given title's print edition.[126] However, the pricing for e-books is an abnormality because it is not mostly based on the actual production costs but is a reflection of publisher's volitional choice to set a particular price (for instance, Brill's e-books have the same price as paper editions - the price for them can easily be about €170).

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[125] FAQ EPUB: Do the Different E-book Formats have Different Prices?, n.pag. <http://www.degruyter.com/page/902#Preise> (Accessed 15 June 2014)

[126] WHSmith: E-books Help, n.pag. <http://www.whsmith.co.uk/fcp/content/Help-eBooks-eBookHelp/content> (Accessed 15 June 2014).

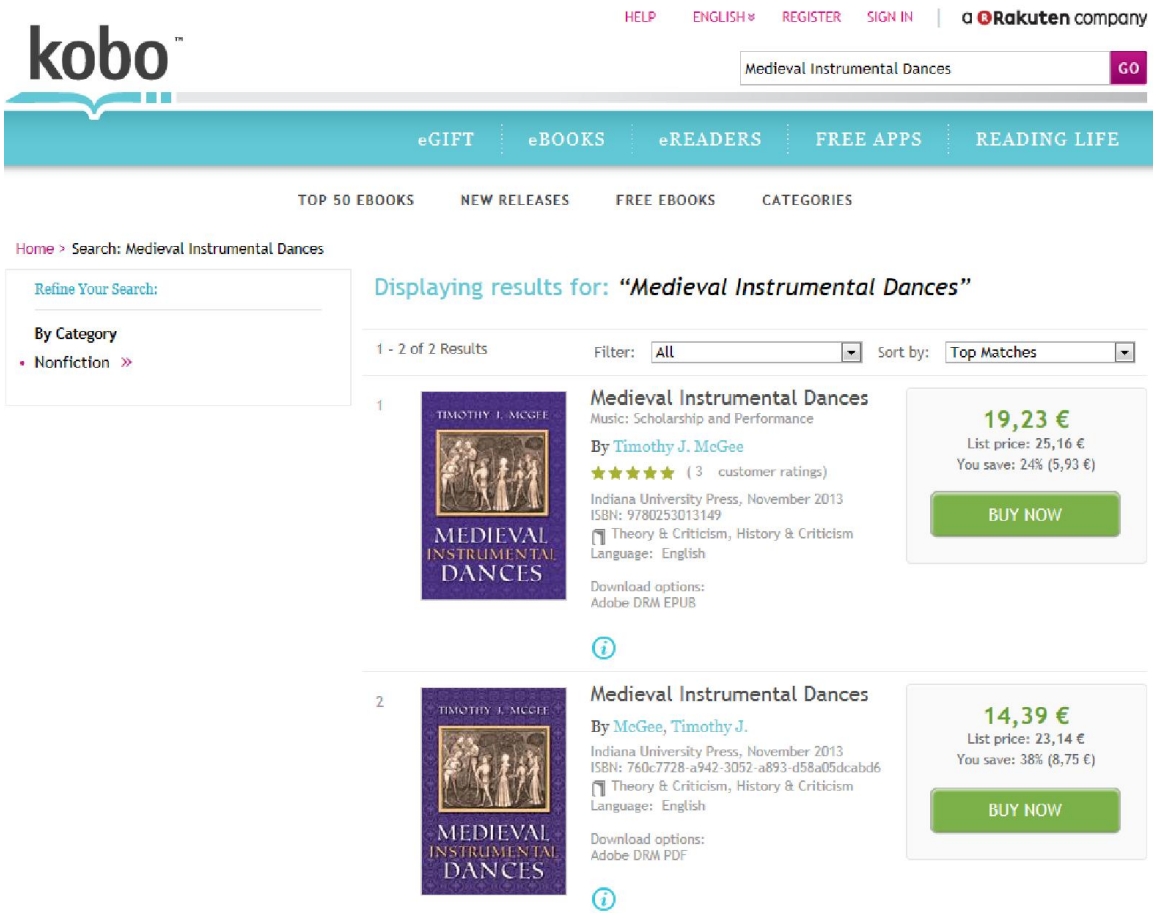

Figure 9. Different pricing for ePub and PDF versions of the same e-book

As the Association of American University Presses states, only 23 per cent of presses offer print/e-book bundling in 2014.[127] Also, it is not common practice for publishers to sell e-books and paper editions in a bundle at a reduced price to individuals. For instance, De Gruyter offers its hardbacks bundled with an e-book at a reduced price but this option is not currently available for all of its titles: the price reduction can be up to 25 per cent of the combined retail price of a print and electronic version. O'Reilly Media, Inc. offers its e-books at a lower price than its print editions, and in bundles the price reduction can go up to 50 per cent. An interesting bundle is offered is offered by Springer's MyCopy (students and researchers can directly order a printed copy of an eBook for €24.99 or $24.99, including shipping and handling,

[127] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 2.

for their personal use[128]) and by Brill's Mybook project (for a fixed price of €25.00 or $25.00 per copy a print-on-demand paperback copy of a chosen book will be shipped free of charge[129]), provided the individual's institution has bought access to the e-book. Given that Brill is notorious for its high book prices (Springer's e-books are cheaper), the initiative seems to be a good option for scholars who want to have a book for personal use, not to mention amateur scholars and students for whom this price should be more or less affordable. At the moment, via Mybook project 3000 titles are available. All in all, the selling of paper books in bundles with their electronic version at a discount should not be ignored by publishers, as this is a case when an end-user pays twice for the same product. However, this model will be viable only if the discounted price is not too high.

Third parties and business models

Many academic publishers sell paper books from their websites, but for e-books they can use so-called third parties. For instance, Yale University Press uses a number of vendors, such as Kobo, Barnes & Nobles, Amazon, etc. A publisher can also choose another publisher to collaborate on e-books distribution, as in the case of Harvard University Press and Princeton University Press who became partners with De Gruyter to sell e-books in 2012[130] and in 2014[131] respectively. The number of vendors can differ considerably from publisher to publisher. For example, Brill listed only six official vendors for their e-books[132] while Macfarland 'does not currently host or sell e-books directly',[133] but lists 22 sellers. Publishers use third parties for selling books both to libraries and to individuals. Amazon is the most popular distributor, even

[128] Springer's MyCopy: Ebook Printed for Just 24.99, <http://www.springer.com/gp/eproducts/springer-ebooks/mycopy> (Accessed 15 June 2014).

[129] Brill's MyBook Program, <http://www.brill.com/products/books/brill-mybook> (Accessed 15 June 2014).

[130] S. Polanka, 'Harvard University Press Partners with DeGruyter for E-book Sales', *No Shelf Required*, January 5, 2012, n.pag. <http://www.libraries.wright.edu/noshelfrequired/2012/01/05/harvard-university-press-partners-with-degruyter-for-ebook-sales/> (Accessed 15 June 2014).

[131] S. Polanka, 'Princeton University Press Partners with De Gruyter for Distribution', *No Shelf Required*, June 3, 2014, n.pag. <http://www.libraries.wright.edu/noshelfrequired/2014/06/03/princeton-university-press-partners-with-de-gruyter-for-distribution/> (Accessed 15 June 2014).

[132] Brill's E-book Vendors, <http://www.brill.com/e-book-vendors> (Accessed 29 July 2014).

[133] Macfarland's E-books, <http://www.mcfarlandbooks.com/customers/ebooks/> (Accessed 29 July 2014).

among American academic presses[134] chosen by 89 per cent of presses; next to it is Ebrary favoured by 82 per cent of presses, followed by former netLibrary (EBSCO e-books) with 81 per cent and by Barnes & Noble used by 75 per cent of publishers. All in all, the range of distribution channels for American academic presses is wide, in total represented by 63 vendors, platforms and aggregators.[135] Among publishers who use only third parties for selling e-books are Oxford University Press, Macfarland, Yale University Press, Random House, Harvard University Press (via the HUP portal at De Gruyter Online).

The most popular way of acquiring an e-book is still by outright purchase in the cases of both libraries and individuals. The popularity of this business model is likely to be connected to a preference for owning an e-book to merely accessing one. In order to avoid unnecessary length and complexity, the issue of the absence of symbolic capital in the case of e-books was excluded from this overview. Accessing e-books can be seen as temporary ownership, sometimes for as short as one or two days. For instance, Rodopi, a small Dutch academic publisher, offers two days access to its online products after purchase via ingentaconnect[136] which in fact violates the whole notion of 'purchase'.

Even after purchasing an e-book, the fact of possession is still very ambiguous. The common concern of readers is that the life span of an e-book is likely to be much shorter than that of a paper copy, which can be passed down from generation to generation. Although many publishers and third parties state that they guarantee perpetual access to their e-books (among them the University of Chicago Press[137] and Brill), and thus encourage individuals to build an e-library of their own, it is still too early to say whether this claim will prove workable in the future. The life span of an e-book can also be tied to the life of a reading device (Bedford e-Book to Go[138]) which makes it unreasonably short.

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[134] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 4.
[135] Ibid., pp. 4-5.
[136] Ingentaconnect is a website that hosts scholarly books and journals from different publishers (can be accessed via <http://www.ingentaconnect.com>.
[137] E-books from the University of Chicago Press, n.pag. <http://www.press.uchicago.edu/books/aboutEbooks.html> (Accessed 29 July 2014).
[138] Compare E-books, n.pag. **<**http://www.macmillanhighered.com/Catalog/elearningbrowsebymediatype/eBook&cparam1=ektron&contentid=12741> (Accessed 29 July 2014).

Furthermore, purchasing an e-book is different from buying a paper version, for in the former case the reader buys a licence but not a 'book'. This is actually a reason why e-books cannot be resold or inherited[139] like paper books (the license is non-transferable). However, in 2013, Amazon received a patent for re-selling used e-books.[140] This new practice has not been implemented yet, but if it is, it will be extremely interesting to see how it changes the digital world. Another serious issue is that in most cases one cannot obtain a refund for e-books or return them (among publishers and distributors who refuse this are Bol.com[141], Brill[142], Wiley[143]), or this occurs only at the discretion of company management (for instance, eBooks.com[144]). Amazon allows refunds and returns of e-books within seven days of purchase[145] but can remove this option from one's account if too many e-books are returned.

Slowly but surely the subscription model is gaining acceptance among libraries and individuals. Cambridge University Press is among those publishers who do not sell their e-books and journals directly from their website but offer a subscription model for different collections. Cambridge University Press Books Online are only available for institutional purchase.[146] Thus, individual scholars are virtually excluded from access to Cambridge University Press collections. However, a subscription model is unlikely to become more popular than outright purchase of scholarly monographs and books for personal use due to the type of the content involved. The

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[139] See also: Z. Knight, 'What Happens to All that Digital Goodness You Have Purchased after You Die?', *Techdirt*, August 30, 2012 <https://www.techdirt.com/articles/20120828/16191120192/what-happens-to-all-that-digital-goodness-you-have-purchased-after-you-die.shtml> (Accessed 29 July 2014).

[140] Amazon Poised to Sell Used E-books, *Publishers Weekly*, February 07, 2013, n.pag. <http://www.publishersweekly.com/pw/by-topic/industry-news/bookselling/article/55849-amazon-poised-to-sell-used-e-books.html> (Accessed 29 July 2014).

[141] Kan Ik E-books Annuleren of Retourneren?, n.pag. <https://www.bol.com/nl/m/klantenservice/digitaal-lezen-klantenservice/subject/62650065/index.html> (Accessed 15 May 2014).

[142] Brill's Help and FAQ: Purchasing Books, Book Chapters, and Journal Articles, n.pag. http://booksandjournals.brillonline.com/help#purchase> (Accessed 29 July 2014).

[143] Wiley: Return Policy for E-books, n.pag. <http://eu.wiley.com/WileyCDA/Section/id-302039.html#2> (Accessed 29 July 2014).

[144] eBooks.com FAQs: What is your Refund Policy?, n.pag. <http://www.ebooks.com/help/faqs/#faq11> (Accessed 29 July 2014).

[145] Kindle Return Policies, n.pag. <http://www.amazon.com/gp/help/customer/display.html/?nodeId=200144510> (Accessed 29 July 2014).

[146] How do I Purchase Access to Cambridge Books Online?, n.pag. <http://ebooks.cambridge.org/faq.jsf?pageTitle=FAQ> (Accessed 29 July 2014).

shorter the life span of a digital product, the higher the chances that it can be acquired on a subscription basis. Thus, trade books (such as romances or thrillers) which are usually read only once and can be substituted by any new title in such a series easily to sell on this model or in bundles. Academic journals are as likely to be sold by outright purchase of individual titles as by subscription. In the case of scholarly books and monographs with a longer 'shelf-life' in the personal library, scholars may be reluctant to accept temporary access and prefer to buy a paper copy or at least an e-book in PDF which is easier to save to one's hard drive. To conclude, pricing for the outright purchase of e-books is higher than pricing for subscriptions, which makes the latter more attractive to libraries. For individuals who cannot afford to buy e-books in quantity, outright purchase is more appealing unless the subscription price is extremely low – a situation that is pretty unlikely in academic publishing.

In order to stimulate sales of e-books, publishers are looking for new methods to promote them among potential readers who may still be suspicious of e-book purchasing. The 'build your own e-library' concept has been mentioned already. Perhaps to create a positive image of e-book lending, the University of Chicago Press offers 30 days access to its e-book collection – but calls it '30-day ownership for $7.00.'[147] Whatever the case, in all probability the concept of ownership is better developed and still remains strong in the academic environment.

Short-term lending is not a model favoured by academic publishers because of the meagre revenue they can earn from libraries by providing e-lending of their collections. On the other hand, the reluctance of publishers and authors to cooperate with libraries and platform providers in lending e-books tips the balance in favour of Amazon[148] which, among its many other innovative projects, offers a Kindle Owners' Lending programme and self-publishing. However, this offer is less relevant for academic publishing because there is little likelihood that the 500,000 books that Amazon offers to borrowers for free and without due dates[149] will contain any significant number of academic titles. In fact, this e-lending programme is a

[147] E-books from the University of Chicago Press, n.pag. <http://press.uchicago.edu/books/aboutEbooks.html> (Accessed 29 July 2014).

[148] D.L. Mantzourani, *E-book Lending: A Disruption in Process* (Unpublished MA Thesis), (Universiteit Leiden, 2013), p. 12.

[149] Amazon.com: Kindle Owners' Lending Library, n.pag. <http://www.amazon.com/gp/feature.html?docId=1000739811> (Accessed 29 July 2014).

camouflaged subscription model because there is no need for readers to return borrowed e-books, and a $99 annual fee is charged for the service.

The power of online retailers like Amazon or bol.com (at a national level) lies not only in the extremely wide range of books they offer, which can compete with any bricks-and-mortar bookstore or the website of any single publisher. Amazon actually offers an additional service – it can be used as a database of all the books (printed or electronic) that exist in the world. If one knows the title of a book or only the author, one can easily find general first-hand information about the book by looking it up in the web shops of this giant. As a result, the chances of an order for a book being made with Amazon remain high.

Demand-driven acquisition (Brill, De Gruyter) is a model designed entirely for libraries, while a variation of the pay-per-view model, the pay-per-use model, was introduced by Ebrary, intended for students.[150] Traces of the pay-per-view model can be found in a growing number of different paper and electronic book previews offered online to individuals. Among these are: Amazon Search Inside the Book, which is used by 88 per cent of presses; Google Books for Publishers (84%); Barnes & Noble See Inside (56%) and Bowker Indexing Service (33%).[151]

Open Access – seen as the future for academic publishing – is especially successful in an e-journal environment, but OA as a model for academic e-books and monographs is still a new area for publishers: 53 per cent of American academic presses have no OA projects at all and only 27 per cent offer specific series or select titles in OA.[152] OA academic books may be offered by publishers via their own web sites as a part of their own OA programmes (Brill Open,[153] De Gruyter Open[154]) or may be made available via various OA directories such as the Directory of Open Access Books (DOAB), the OAPEN Library (Open Access publishing in European Networks) or specialised OA publishers (Open Book Publishers).

At the moment, the OA initiative is predominantly adopted in academic publishing with the aim of freely disseminating knowledge, and the question is whether OA is possible within trade publishing because in this case the notion of 'knowledge dissemination' will have to be

[150] J.B. Thompson, *Books in the Digital Age*, second edition (Polity Press, 2011), pp. 342-343.
[151] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 7.
[152] Ibid., p. 8.
[153] Brill Open: Open Access Publishing, <http://www.brill.com//brill-open-0> (Accessed 29 July 2014).
[154] De Gruyter Open, <http://www.degruyter.com/page/829> (Accessed 29 July 2014).

expanded as these publications do not represent the results of research. For instance, the search for free Kindle books on Amazon gave more than 48000 free e-books with more than 15000 nonfiction titles among them. Another American publisher of science fiction and fantasy, Baen Books (who earlier tried to use the OA model for its e-books), offers free e-books under the Baen Free Library.[155] These genres can hardly be associated with knowledge dissemination and reasons for dissemination for free may differ from objectives pursued by OA academic products.

With the advent of digital technologies, new business models have appeared with the aim of exploring new ways to target the academic audience. Libraries are offered Patron Driven Acquisition and pay-per-view options; at the same time publishers looking for new market opportunities are showing more interest in the business-to-customer approach, which will be discussed in the next section.

A shift towards a business-to-customer model

According to the Association of American University Presses, in 2013, the average percentage of e-book revenue from direct sales from publishers' websites was 4 per cent, with retailers being still the second most important source of revenue (41%) after aggregators, who contribute 49 per cent.[156] The percentage of revenue from direct sales may seem to be unimportant or small compared to that from aggregators or retailers, however, depending on company size it can easily fall within the top ten or twenty sources of revenue and cover the costs of web site maintenance and development with something to spare.

The old and proven business-to-business model where the main 'end-user' was a library is still viable but fails to bring as much revenue as it used to. Thus, publishers are looking for new ways to keep their businesses growing. Before, they were mostly oriented towards libraries, but with the development of an e-book market and appropriate technologies, a shift to a business-to-customer approach is going to take place. No one would deny that, for academic publishers, libraries will always be one of their most important customers, but it is becoming

[155] The Baen Free Library, <http://www.baenebooks.com/c-1-free-library.aspx> (Accessed 29 July 2014).
[156] *Digital Book Publishing Strategies in the AAUP Community: Spring 2014*, p. 4.

apparent today that publishers are being forced to adapt to what individuals want. Online shopping made academic books better available to individual scholars than used to be the case (24/7 availability, fast or immediate delivery, easy discoverability, etc.). POD was initially aimed at lowering stock levels and the money tied up in it as well as to lower write-off costs of unsold stock, and it worked well for academic presses because of low sales levels and long sales lives, but eventually POD turned out to become a way of making any book available, more to satisfy the needs of individuals than those of institutions (after all the libraries have already been provided with the copies they wanted). For publishers to have a website of their own and sell paper and electronic books from it is another step towards the business-to-customer paradigm. Print and e-book bundling are as profitable in sales to individuals (aforementioned Brill's Mybook project, for instance) as to organisations.

Before adding a new format for e-books to existing ones (the second, the third and so on) publishers will need to consider market demand. If a new format produces additional sales without cannibalising revenue from other formats, it is feasible to offer it. In reality, academic publishers cannot be sure that ePub will stimulate sales or that its users will be new customers who are not already buying e-books in PDF. Publishers are increasingly asked to meet the expectations of the individual scholar who wants to read e-books on a variety of devices: a PDF version for laptops and tablets, ePub for mobile phones and probably one of the formats used for reading on a dedicated e-reader. Furthermore, the button provided Amazon's and Barnes & Noble's web shops to request an electronic version of a paper book for their own dedicated e-readers can serve as an indicator to publishers of what their customers want. Making e-books in different formats is actually a trade-off between publishers and individuals, because libraries are not very interested in keeping and archiving several formats of the same book, at least because of the additional costs involved.

The shift to a business-to-customer approach is not going to happen overnight for a number of reasons. Although academic publishing can hardly be called a mass production business, it is in the sense that distribution and marketing are aimed at selling, not at the title level but in big deals, bundles, etc. Actually, it is rare enough for a single title to be marketed to a large audience – publishers deal mostly in collections. Thus, the chances of selling more copies

of a single book are being reduced because individual scholars are simply overlooked. It is an established tradition for scholars to take the initiative and actively seek out books but in a time of financial stress, publishers will have to compete to grab individuals' attention. This is a situation where social media has proved to work well. At the moment, Facebook and Twitter offer an easy and cheap but effective way of providing information about new releases not only to a scholarly audience but to a large general audience. Nobody expects academic books to become bestsellers, thus almost no effort is spent on targeting individuals: in the current situation, this may be an example of an old and obsolete way of thinking and running a business.

A look to the future

The present day is a challenging, yet interesting period in the development of academic publishing. Roads of scholarly communication and research are undergoing profound changes, especially in the sciences:

> Partly as a consequence of this ability to generate data on such an unprecedented scale, scientists are now publishing more widely and at a greater frequency than ever before: today, life scientists alone are generating more than two peer-reviewed papers every minute.[157]

It is quite likely that instead of lamenting the diminishing importance of academic publishers in making public the results of research (because of so-called self-publishing), the very near future will see publishers bearing a growing responsibility for publishing monographs and academic books. They will perform the role of intermediaries between different scholars in helping them to produce not an article but a full-length book. This role may become crucial in the light of recent changes in the ways academic work is evaluated at universities. For instance, in the UK, scholars are under pressure from new systems of evaluation; the Research Excellence

[157] Pettifer, S. *et al*, 'Ceci n'est pas un Hamburger: Modelling and Representing the Scholarly Article', *Learned Publishing*, Vol. 24(3) (2011), p. 208.

Framework (REF) is to be implemented in 2014. Crudely put, all research results are to be presented in publications, and publishing articles is faster and earns more points than writing a lengthy book that can be finished only after several years of work. If a publication is unlikely to become REF-able (i.e. bring enough points), it will not be approved by the managing body of the university. This REF-ability in fact represents an undermining of scholarship and a sapping of the spirit of science, as it will result in a decreasing number of academic books and monographs. Analogously, this practice poses a threat to academic publishing. The tendency to publish more titles with the falling numbers of copies sold shows no signs of ceasing. In this regard, the role of publishers is dual: they stimulate the development of scholarship and help to disseminate knowledge but at the present moment the increasing number of publications partially caused by their attempts to increase profits cannot but result in a deterioration in the quality of published works. It may be of a particular relevance to trace the percentage of academic books that fail to meet academic requirements to the works of this kind. Similarly, the quality of many OA journals that are springing up in large numbers is in doubt, as is the whole procedure of peer review [158] (regardless of its advantages and contradictions), because it cannot be mediated in a proper way due to the overwhelming number of publications. Another relevant study can be conducted in order to trace back the route of articles that were rejected by the high-ranking journals and ended up published somewhere else.

Common practice today is to publish more new titles to compensate for the decreasing sales. One concern that can arise in this situation is how the scholarly world is supposed to digest this growing number of publications with shrinking funds available. When there are so many publications available, the visibility of scholars who are at the beginning of their careers will definitely decrease and one's inability to read or keep track of all the publications in a particular field may become a real problem (for libraries too). Logic suggests that at some point the number of publications will reach a maximum where it is no longer possible either to publish more titles or to find academic material to publish. Publishers are already experiencing problems in finding authors, especially for journal articles; if there are so many new journals in existence, where can authors be found? This means that the pace of a growth of academic

[158] J. Bohannon, 'Who's Afraid of Peer Review?', *Science*, 4 October 2013: Vol. 342, no. 6154, pp. 60-65, <https://www.sciencemag.org/content/342/6154/60.full.pdf> (Accessed 15 June 2014).

publishing should be co-extensive with the growth of the academic community wishing to publish the results of the research. University presses seem to be in a more favourable situation because they are not under the same pressure to produce more and more titles in order to maintain constant growth as publishers are who are listed on the stock exchange and who are thus forced to show growth every year. All in all, the downfall of academic publishing is not very close and it will be intriguing to see how digital technologies will change it and perhaps prevent its collapse.

Conclusions

Academic publishing covers a wide range of content which needs to be delivered to the end-user in an appropriate way. It is out of the question that it could be delivered in only one format. The more bitty the content, the more amenable it is to online dissemination and consumption. Long narrative content requires other forms of consumption while dissemination can be achieved with the same simplicity as bitty content (e-books are downloaded easily from the web but are consumed on dedicated e-readers or laptops). The next step is to determine which device should be used as the medium for consumption and which mode of reading will be applied. By answering these questions, the best format can be chosen. All in all, the type of content will be the most important factor in determining the choice of a format.

As this paper has focused on academic e-books, two formats that are seen as the most common formats for e-books were examined. The choice of a format for a publisher is not a straightforward matter when several formats compete with one another. The attempts of ePub to become a recognised format for academic e-books have proved less successful than its developers would have liked. No one will deny that much work is being done to promote it but it is without effect and it still too early to proclaim the dominance of ePub in academic publishing. This paper has attempted to demonstrate this by examining various software reading systems and the functionalities of different file formats. PDF is, however, acknowledged as the leading format for academic e-books by the academic community itself.[159] Yet neither

[159] It is mentioned in too many articles to list them all here. Amon them: M. Aaltonen *et al*, 'Usability and Compatibility of E-book Readers in an Academic Environment: A Collaborative Study', *IFLA Journal*, Vol. 37(1)

ePub nor PDF, with their pitfalls, limitations and benefits, can be considered to be the only possible format for academic e-books. The requirements of different modes of use (a context in which a particular type of content is used determined by a device and a reading mode applied) will differ too much to exclude other formats from the academic e-book market, but some modes of use become prevalent for a particular type of content and therefore guarantee the dominance of some formats. For instance, reading and working with academic e-books, which involves in-depth reading, is mostly done on laptops or PCs, and thus this mode of use grants PDF its current market leadership. In addition, the ability of formats to imitate some features of other formats (reflowable PDF and fixed-layout ePub) complicates matters.

Academic publishing today is in a state of a constant flux caused by changes in technology. If a publishing house cannot keep up with these changes, it is very likely to be overtaken by another publisher. Among new trends is the issue of accessibility where there seem to be greater technical advances than have been implemented in practice. New technologies have also been stimulating the appearance of new pricing and business models as well as changes in production processes (XML-workflow, for instance). One of the main issues in academic publishing today is whether adding new formats to existent ones will help publishers reach new end-users and cover the costs of production of these formats. Adding new digital formats may be dealt with by publishers in the same way as they approached the first e-books which were thought to cannibalise revenue from print editions. However, all this shuffling of formats is no more than the publishers' attempts to meet the expectations of their end-users, and this paper has tried to trace this shift from a library-oriented paradigm to a reader-oriented perspective.

The loss of physicality by e-books and inability to be translated into cultural capital in a habitual way, as well as to represent someone's social identity, are virtually treated as a serious drawback for the uptake of this electronic medium. But e-books have been portending a significant change in the book industry, and it should not be forgotten that in the course of its advancement this new medium may develop a new culture of social identities: reading e-books may be opposed to reading paper books as being old-fashioned, unprogressive and

(2011), p. 21. or Pettifer, S. *et al*, 'Ceci n'est pas un Hamburger: Modelling and Representing the Scholarly Article', *Learned Publishing*, Vol. 24(3) (2011), p. 213.

conservative, or environmentally unfriendly. Also, a shift from one medium and a real product (a paper book) to another medium containing numerous products/books on it (an e-reader) may return scholarship to its inward orientation, what can be describe as 'scholarship for scholarship's sake', opposed to outward direction when it serves for someone's ego manifestation. Thus, by ceasing to be a manifestation of someone's reading taste, e-books may open new horizons for 'pure' scholarship: disembeddedness of e-books from the medium will free up a scholarly knowledge from being a prisoner of people thinking about themselves in terms of elitism and selectivity. This is a potential that e-books bear, but the extent to which humanity may make use of it is unlikely to be very high; even at the dawn of e-books and new technologies, the culture of online sharing and making oneself known to a large online community is forming the landscape of such communication.

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