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# The Paradigm Shift in Realizing The Right to Read: How Ebook Libraries are Enabling in the University Sector

## Abstract

Millions of people with print disabilities are denied the right to read. While some important efforts have been made to convert standard books to accessible formats and create accessible repositories, these have so far only addressed this crisis in an ad hoc way. This article argues that universally designed ebook libraries have the potential of substantially enabling persons with print disabilities. As a case study of what is possible, we analyse twelve academic ebook libraries to map their levels of accessibility. The positive results from this study indicate that universally designed ebooks are more than possible; they exist. While results are positive, however, we also found that most ebook libraries have some features that frustrate full accessibility, and some ebook libraries present critical barriers for people with disabilities. Based on these findings, we consider that some combination of private pressure and public law is both possible and necessary to advance the right to read cause. With access improving and recent advances in international law, now is the time to push for universal design and equality.

**Key Words:** right to read; print disabilities; CRPD; Marrakesh Treaty; ebook libraries

## Introduction

Equality is a dream that is confounded by how society is structured. The social model accurately identifies institutions and structures in society as the primary cause of disablement (Shakespeare 2006). The operation of this disablement is particularly apparent when considering how people with print disabilities access the written word in the digital age. For most of human development, access to the written word has been denied to people with print disabilities, such as blindness, low vision, dyslexia and people who are unable to handle standard books. The inability of millions of people with print disabilities across the world to access the written word has been referred to as a ‘book famine’ (Australian Human Rights Commission 2012). Resolving the book famine – delivering equal access to people with print disabilities – requires that books currently available to sighted people are made available in accessible formats. For a long time, accessibility has been treated as an exception, requiring costly efforts in translating written works into accessible formats. Because of the expense, efforts in accessibility have largely been limited to a small fraction of the most popular books and some ad hoc transformation on request by people with disabilities in certain privileged situations.

This article examines the promise of universal design that might be enabled through the digitisation shift in publishing. Unlike paper books, books in digital form can be inherently accessible for people with print disabilities through a variety of assistive technologies. As ebooks become the norm, the potential arises to redesign social institutions –retailers, libraries, and educational organisations through which people with print disabilities access books – to provide equal access in a way that was unimaginable only a few decades ago. This article investigates the current state of accessibility in ebook libraries available in the tertiary education sector in order to identify both the potential of universal design and the current

challenges. While levels of access differ amongst providers, we found that a number of commercial platforms provide good access within existing distribution models.

Based on these findings, this article suggests that universal design in the digital environment might for the first time make the right to read a reality for people with print disabilities. The international community is increasingly concerned to ensure that people with disabilities can participate fully in society. As technical capacity increases, there is an emerging political imperative to see full access delivered. We argue that a core component of achieving full access is to ensure that books published in the future are made accessible from the beginning. This is likely to require not just private action, but a rethinking of current approaches of anti-discrimination law, which do not require that publishers adopt principles of universal access. We extrapolate from the possibilities and challenges of accessibility in the tertiary sector to consider how better access to books can be achieved across society. The time is now ripe for a change to the social constructs through which ebooks are now being made available to ensure that full access can be realised.

Part I of this article explains the extent and significance of the book famine, and introduces the technological and geo-political context of the current debate around access to books. In Part II we present a case study of the ebook libraries in the university sector in order to investigate the possibility of universal design. We provide a description of some of the challenges and opportunities presented by twelve major ebook libraries in the humanities and social sciences. While significant limitations remain, we show that ebook libraries are emerging as a substantial avenue for equality. Providing universities are able to afford sufficient subscriptions, staff and students with print disabilities are able to access thousands of monographs and book chapters.

Part III of this study argues that disability scholars should be moderately hopeful that this trend towards increasing access will continue. While some tertiary ebook libraries have intentionally cut access, others are seemingly open to improving disability access to their platforms. Importantly, however, access to the written word should not be contingent upon association with a university. We argue that the improving levels of access in the university sector should be seen as a demonstration of what modern technology makes possible. Given the potential change that technological advances make possible, persons concerned with equality should not argue for improved access, but should instead argue for universal access. Market pressure might drive some increases in accessibility, but it is likely that some extension of anti-discrimination regulation will be necessary to guarantee full access.

## **Part I. Ebook Libraries and the promise of universal design**

Digital books represent a massive potential advance in accessibility for people with print disabilities. New adaptive technologies carry the promise of universal design: that the world's knowledge and cultural works can be made available to people with print disabilities on an equal basis. Much has changed in the two centuries since Louis Braille developed his raised dot system in 1824. Braille books and the books-on-tape that emerged in the 20<sup>th</sup> century are slow to read, bulky to transport, and extremely expensive to produce (Whitehouse, Dearnley and Murray 2009). Books that are distributed in digital formats enable people with print disabilities to access books electronically through a variety of assistive technologies – including screen readers, large-font displays, and refreshable Braille (Suzor, Harpur and Thampapillai 2008). As most new books are now 'born digital', the problem of accessibility for books published in the future can, at least theoretically, be overcome with relatively little cost. Unfortunately, current distribution models under-deliver on access: electronic books that are available are often deliberately or inadvertently inaccessible to people with disabilities,

and accessible digital files have historically been difficult to obtain (Royal National Institute of Blind People 2006).

The inability of people with print disabilities to access the world’s resources of written knowledge and culture has great flow-on effects in hindering their full participation in society. Lack of access to textbooks and other educational works greatly hinders people with print disabilities in primary, secondary, and tertiary education (Harpur and Loudoun 2011). Beyond education, the lack of access to written materials reduces the capacity of people to learn, to work, to engage in cultural and political expression, to read for leisure and enjoyment, and to make a contribution to society (Suzor, 2013). As Abigail Rekas explains,

*[t]he ability to access the written word is essential to the realization of many human rights. It provides the foundation to the right to political involvement, freedom of expression, the right to education and the right to access culture and take advantage of scientific progress (2013 382).*

In recent years, providing equal access to knowledge and cultural materials has become a priority at the international level. The United Nations Convention on the Rights of Persons with Disabilities (CRPD), which commenced in 2008, reinforces the right of equality of access. The Convention requires member states, among other things, to take ‘measures to the maximum of [their] available resources’ (CRPD Art 4(2)) with a view to progressively achieving full realization of the rights of people with disabilities to access cultural materials, information, and educational resources on an equal basis. This requires ensuring that people with disabilities can ‘[e]njoy access to cultural materials [including books] in accessible formats’ (CRPD Art 30), and access ‘an inclusive education system at all levels’ (CRPD Art 24).

The international focus on enhancing access has borne important fruit in recent times. In 2013, the World Intellectual Property Organization concluded the Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (The Marrakesh Treaty). The Marrakesh Treaty aims to increase the amount of accessible material available worldwide by creating a standardised framework to ensure that countries all around the world introduce exceptions into their copyright regimes to enable both people with print disabilities and the institutions that assist them to create accessible copies of publicly available written materials. Importantly, the treaty also enables cross-border sharing of accessible books, making international cooperation in digitisation possible and enabling the substantial number of books already available, particularly in the US, to be made available in other countries.

The Marrakesh Treaty is a significant advance, but it is only the start of a solution to the book famine. Most importantly, the Marrakesh Treaty firmly establishes a baseline exception to global copyright norms to ensure that copyright does not operate as a barrier to accessibility. This approach extends and makes more efficient the schemes that already exist in most western countries, where educational institutions, disability groups, and others can create accessible copies of written texts on behalf of people with a disability. This system does not, however, create a positive legal right to access books in an accessible form. Anti-discrimination laws impose certain limited obligations on certain relationships – including, for example, educators duties towards students and employers duties to employees (Fredman 2011, 148-152; Rees, Lindsay and Rice 2008, 386 and 421; Sargeant 2013, 7). These duties require educators, employers, and some others to make reasonable adjustments for persons with disabilities. These laws do not require duty holders to ensure equal access (Harpur 2010). The duty is only to make adjustments that are economically and practically possible; since it is expensive to translate standard books into accessible ebook formats, under this

model persons with print disabilities are unlikely to ever be able to exercise their right to read on an equal basis as the wider population. Under this scheme, accessibility remains the exception, not the norm.

There is reason to believe that an alternate social structure is possible, that the digital era might enable universal design with some changes to the institutions that provide access to books. If books that are made available through regular digital distribution channels are accessible to people with print disabilities, the dream of true equality of access to educational and cultural works may become possible. In the next part, we examine the current reality of accessibility through a study of ebook libraries in the tertiary education sector, in order to highlight the challenges and opportunities for realising this ideal of universal design. We show that despite some difficulties, private commercial providers have made significant inroads into enhancing accessibility in this sector. The results of this study imply that ensuring equality of access by changing the institutions that cause disablement may be possible, an issue we return to in Part III.

## **Part II. An Analysis of ebook Accessibility in the University Sector**

This study examines the enabling potential and the challenges of universal design through a snapshot of ebook libraries in the university sector. We seek to understand the current state of accessibility by drawing out some common themes and identifying areas that still need improvement. We focus particularly on major ebook subscriptions available in a major Australian university library, on the assumption that well-funded world class educational institutional libraries are likely to showcase best practices in accessibility. A typical well-funded academic library provides access to many thousands of titles in electronic formats.



We focus on ebooks in the humanities and social sciences, as monographs are particularly important in these disciplines, and on law, which is the authors' home discipline.

## **Method**

In this study, we adopted a qualitative case-study approach to investigate the human experience of accessing ebook libraries. The study was designed to illuminate difficulties with obtaining access to books and broadly assess the accessibility of ebook libraries from the perspective of academics with blindness and low vision. This study does not provide a rigorous quantitative metric of accessibility.

The research for this study first involved meeting with library staff and obtaining a comprehensive list of all twelve ebook library subscriptions that were relevant to humanities, social sciences and law at the University of Queensland. The University of Queensland is a large institution with a Times Higher Education World University Rankings 2013-2014 of 63. The full list of databases tested is available in Appendix A.

The accessibility of each ebook library was tested through two stages. The first stage aimed to identify whether the website itself was usable. There are a range of extremely robust guidelines which might be used to assess accessibility. For example, the Web Accessibility Initiative has published the Web Content Accessibility Guidelines version 2.0 and the British Standards Institute have published the standard BS 8878:2010 Web accessibility Code of practice (Kelly Et Al, 2009). In practice, however, using website accessibility validators, which measure technical compliance with these standards, did not provide meaningful data. In our testing, for example, validating one website reported 43 errors, but these technical errors did not create notable difficulties for accessibility in practice.

We instead selected a different approach in order to focus on the human experience of navigating ebook libraries. We drew an analogy to accessibility in a physical library, testing

to see whether a blind person could enter the library and locate and access a book.

Researchers tested each ebook library by performing the standard tasks associated with reaching the point at which the ebook is opened or downloaded to the user's computer: logging in, browsing, performing basic and advanced searches, viewing search results, and selecting titles. The process of browsing and performing advanced searches and downloads was performed using both Microsoft Windows and Apple OS X in conjunction with the proprietary screenreaders Job Access With Speech (JAWS) for Windows and Voiceover for the Macintosh, as well as the open source NonVisual Desktop Access (NVDA) project for Windows.

The second phase analysed how accessible an ebook was once a user had retrieved it. The Daisy Consortium has developed systems for testing accessibility of ebooks, but the formats in which ebooks were downloaded meant that not all ebooks could be run through these automated accessibility testers. Additionally, it was again important in this setting to test for human experience, rather than technical compliance. Researchers accordingly developed a more targeted criteria to judge usability, focusing on the information that a university student or academic would need to extract from an ebook. Researchers consulted with academics and university graduates through a mix of face-to-face discussions, telephone and e-mail discussions during June 2013 to develop the following criteria:

1. *Is the text formatted so that it can be read using a screen reader?*
  - a. Can a screen reader read the content of the ebook?
  - b. Is line spacing correct or are paragraphs or lines not formatted, with hard returns in correct positions?
  - c. Are tables and graphics described in prose?
2. *Is it possible to navigating the ebook?:*

- a. Are contents and index pages available? If yes, do they have links that work?
  - b. Is it possible to search for keywords in the book?
  - c. Is it possible to move to particular pages in the book?
3. *Is the ebook formatted to enable a user to cite according to the Chicago Manual of Style (15th ed)?*
- a. Are there page numbers in the ebook and do the page numbers of the ebook correspond to the print version?
  - b. Are the references in footnotes and reference list accessible?

A sample of 15 ebooks or ebook chapters was downloaded from each ebook library by randomly selecting 5 books each from the first page of results from the searches using the phrases ‘social model’, ‘anti-discrimination law’ and ‘law’. We do not take into account any potential bias in search results presented by the ebook library platform. Each of these books was evaluated against these criteria and ease / difficulty of access was assessed by an adaptive information technology expert and re-tested by one of the authors. University of Queensland librarian staff provided assistance on confirming some access issues. For example, where the ebook was in a secure PDF file and unable to be read by screen readers, then the library staff would confirm that the PDF file did indeed contain text that a sighted user could read. Importantly, this sample is not designed to be representative. Caution should be exercised when generalising the findings of this study. To avoid providing misleading results, this study will avoid stating what percentage of titles on each ebook library was accessible or inaccessible. Instead, we present our experience in a more descriptive manner, in order to highlight important issues and common themes.

A draft copy of these results has been provided to each of the above mentioned ebook libraries for comment and, hopefully, action where appropriate. We hope that some of our

results are rapidly out of date: in an ideal world, these ebook libraries would address these identified barriers to access in the immediate future.

### **Findings: accessing ebook libraries**

While some of the websites presented some minor limitations, nearly all databases enabled a person using a screen reader to navigate the website, perform searches and reach the point of opening a book. Two main issues arose in this phase of the testing: the use of inaccessible images on login screens; and the difficulty of identifying which books were within the scope of a user's subscription.

#### Logging in – use of inaccessible 'CAPTCHAs'

Many websites now use 'CAPTCHAs'—graphical representations of a sequence of characters deliberately made difficult to read—on login screens and form submissions. The user must correctly type out the sequence in order to proceed. CAPTCHAs are notionally designed to be readable by humans but not by machines, and therefore are designed to exclude automated 'bots' from accessing certain functions on a website (and particularly, cut down on spam comments, automated downloading, and exploitation). CAPTCHAs are notoriously difficult for people with visual impairments to read and solve (Onwudebelu, Sanjo, Obi, & Alaba, 2010).

At least two sites in our testing used CAPTCHAs on their logon screens. While these sites provided audio challenges as an alternative to visual challenges, these audio challenges also represented an extremely frustrating barrier to access. In our study, for example, three totally blind screen users, two of whom are musicians that can identify notes by listening, made ten unsuccessful attempts to understand the audio challenges on Elgaronline and Oxford Scholarship Online. This accords with usability evidence which suggests that audio

CAPTCHAs can take three times as long to solve and have very high failure rates (Bursztein et al 2010; Shirali-Shahreza & Shirali-Shahreza, 2011).

It is accordingly not surprising that the use of CAPTCHA technology renders certain functions of ebook libraries inaccessible. For these two platforms, it first appeared that a user was required to individually sign up to the ebook libraries in order to download a book. After obtaining sighted assistance it emerged that it was only necessary to enter sign-in details (which included a CAPTCHA) on Elgaronline when the user's subscription did not include access to the particular ebook chapter, but this was not apparent without sighted assistance. For Oxford Scholarship Online, it was necessary to login if a user desired to use the 'save' function to download a book.

#### Identifying books within a subscription

The second major accessibility problem encountered when navigating some ebook libraries was in identifying which books were included in a user's subscription. One approach involved employing a graphic of a lock on the thumbnail image of the book cover to denote that full text access is not available. Unfortunately, when these graphics are not labelled, then users required sighted assistance to understand why the ebook was not opening.

#### **Findings: Reading the content of ebooks**

The second phase of the study identified more substantial difficulties in reading books available in ebook libraries. Importantly, we found that several libraries provided very good access, although none of the libraries tested provided both high quality experiences in both reading online through a web browser and downloading an entire book in an accessible format for offline reading. Unfortunately, we also encountered serious problems in many ebook libraries that operate to prevent people from disabilities from gaining access.

### Reading through the web interface

Reading books through a web interface can be a difficult and time-consuming task. The most accessible libraries enabled users to view the full contents of ebooks in a HTML version without needing to download them. The Sage Knowledge/Sage ebook Collection, for example, enabled ebook chapters to be viewed in the browser as well as downloaded in PDF. Oxford Scholarship Online enabled the user to view HTML full text, but as discussed above, the ‘save’ function to PDF is not accessible without sighted assistance.

Other ebook libraries provide a less satisfactory online reading experience. A range of EBook libraries did not permit EBooks to be read on-line in accessible formats. EBooks would open as images that screen readers cannot process, or in formats that were extremely difficult to read. The ACLS Humanities ebook library only permitted users to view a page at a time. After reading each page the user was required to navigate to the turn page button and then navigate back to the beginning of the content of the ebook on the website. This made searching across the ebook and reading a chapter extraordinarily difficult. Navigating around the ACLS Humanities ebook library website to distinguish between general information and the content of the ebook is time-consuming. Screen readers do not readily distinguish between colours or the size of text. Users therefore need to wade through a significant amount of unnecessary material to read each page of an ebook. One book tested, for example, had 552 words of general matter before the page of the ebook was displayed on the screen; following the 206 words of book content there were 530 words of more general material on the page. Another book tested had 521 words before the start, 201 words of content, and 501 words of extra website material. By devoting over two-thirds of each page’s content to material that does not form part of the ebook, ACLS Humanities ebook library provided a highly frustrating reading experience.

### Downloading books

In many cases, it is preferable for users to download the full text of a book for offline reading in another program. Out of the twelve ebook libraries analysed, only five libraries enabled users to download an Ebook as a single fulltext file. This study found that Brill E-Books, Palgrave Macmillan Connect and SpringerLink E-Books were the most accessible ebook libraries. These libraries permitted users to download entire full-text monographs in accessible PDF format. Researchers were able to open these PDF files in standard software, such as Adobe Acrobat X Pro, and read these files or save them to text format.

The Ebook Library (EBL) and EbscoHost platforms also enabled users to download full copies of ebooks. Unfortunately, ebooks downloaded through these platforms, with the exception of one book on EbscoHost that was available in plain text, were limited by Digital Rights Management (DRM) encryption which only enables access through specialist software. In each case, Adobe Digital Editions is required to checkout and read a book for a maximum period of 14 days for EBL and a matter of hours on EbscoHost. EbscoHost additionally requires users to create an individual account before being able to download books. Unlike an unrestricted PDF, Adobe Digital Editions prevents copying of content into working documents (which is analogous with a sighted person photocopying a few pages out of a standard book, or a contemporary researcher quoting a passage from an electronic book). Digital Editions also presents some difficulties reading on the Macintosh with the Voiceover software, and does not enable screen readers to accurately detect formatting (bold, italics, and other styles).

Accessibility testing of the Ebrary ebook Library provided mixed results, and an additional 15 titles were analysed to provide increased reliability. Ebrary enables ebooks to be downloaded chapter by chapter or in full-text. There were substantial accessibility

differences between the full-text and chapter downloads. Full ebooks were downloadable through Adobe Digital Editions, and these books were accessible and able to be navigated. Unfortunately a large number of the ebooks tested were not available in their complete form. Despite having subscriptions to the full-text of the ebooks, it was only possible to download the books by individual chapters. In itself, limiting downloading to chapters is frustrating, but not an insurmountable barrier. Unfortunately, many of the chapters downloaded through this interface were encrypted PDF files with security settings that restricted copying, which also has the effect of excluding screen readers, rendering these books entirely inaccessible. The other significant problem is that Ebrary sometimes imposes a limit on the number of chapters that can be downloaded, which makes it impossible to obtain some books in full.

Another group of ebook libraries enabled users to download book chapters in accessible PDF files. While far from ideal, book content was available in an accessible format from Elgaronline, Sage Knowledge/Sage ebook Collection, and Wiley Online Library.

### Formatting

Once books were downloaded, formatting issues posed significant barriers to readability across all ebook libraries. Many ebooks had words and sentences running together without appropriate spacing, and this problem was not isolated to any individual ebook libraries. Typically, in a PDF or similar document, the image displayed on the screen is stored separately to the text it represents. PDFs without a text version are wholly inaccessible – many scanned journal articles, for example, are inaccessible – and PDFs whose text is not well set out are extremely difficult to understand with a screenreader, which need spacing in order to correctly pronounce words. It is not clear why these formatting problems exist; indeed, in at least one case on EBL, an ebook was available in two formats: PDF and ePUB. One of these formats had correct spacing while the other format did not.



Other formatting problems arose relatively often. Cambridge Books Online enables users to download single chapters in PDF. The PDF chapters that were successfully downloaded in at least three books tested were formatted so that each word of a sentence appeared on a new line. Searching within the document was impossible as there were no phrases, and sentence and paragraph structure was completely confounded.

Embedded graphics also pose significant problems for people with print disabilities. Many publications included graphs, tables and images. Almost universally, the ebooks that included visual representations of information did not provide any description of the content of these graphics. Any information presented only in graphical form is inaccessible; worse, readers are often unaware of what information they are missing out on.

### Referencing

Referencing also presents a problem that is common with all ebook libraries tested.

Identifying page numbers was difficult in all ebooks and impossible on many platforms.

Many ebook libraries fail to display page numbers that correspond with the page in the print version of the book. Where the ebook has a comprehensive contents page that includes page numbering, it is possible to provide some general page referencing. It is however extremely difficult to provide an accurate pinpoint when quoting from the ebook.

## **Part III. The Wider Context: addressing the book famine through universal design**

Continuing the current ad hoc approach to accessibility is unlikely to be able to achieve equality. The way in which blind people access books is currently structured in a way that is predominantly reliant on educational institutions, libraries, and NGOs to provide accessible

versions. Students and academics within world class tertiary institutions probably have the best levels of access, but few people with disabilities are this privileged. Libraries are able to provide some level of access to a broader section of the community, but as Tom Shakespeare pointed out, a “library of five million books could never afford to provide all these texts in all the different formats that visually impaired users might potentially require.” (2006, 219).

NGOs provide some additional access: blind residents of the United States have access to some several hundred thousand English and Spanish language titles digitised by volunteers through Bookshare.org, and might soon have access to up to ten million books digitised by Google and held by the HathiTrust digital library (Harpur and Suzor 2013). If the Marrakesh Treaty is well implemented and books held in disparate collections are shared between institutions, people with print disabilities around the world might be able to enjoy access to 10-15 million books. The total number of books in the world, by contrast, is probably closer to 130 million (Taycher, 2010).

Current social structures for access to books set up accessibility as an exception to the norm. Accessible repositories, populated by the efforts of public institutions and NGOs to digitise print books, create parallel (‘separate, but equal’) access regimes for sighted people and people with print disabilities (Wentz, Jaeger, & Lazar, 2011). Pragmatically, given the high costs of digitisation, these parallel structures will never approach substantial equality.

Only a few years ago, before ebooks became popular, the possibility of real equality of access was almost inconceivable. Now, however, most new books are born digital, and many publishing houses are selling access to books in digital form. This study has found that in the tertiary education sector, a number of ebook libraries are providing access to many thousands of ebooks in reasonably accessible formats. The fact that a number of commercial ebook

libraries have voluntarily adopted inclusive design principles, suggests that it can be economically viable to provide accessible ebooks, at least in the tertiary sector.

Clearly, the technology now exists to distribute ebooks in accessible forms. Ebook libraries that embrace universal design principles can provide persons with print disabilities access to books on the same terms as the wider population. The challenge for disability advocates in the immediate future is to consolidate and improve accessibility within well-established sectors like the tertiary sector, and to extend these levels of access to people with print disabilities outside of these sectors. This part explores how advocates might be able to advance the right to read and motivate stakeholders to create ebook libraries that are more inclusive for people with disabilities.

### **Consolidating access**

Despite many of the ebook libraries we tested being accessible, a significant number continue to have disabling platforms, and most have some major accessibility problems. Advocates for the right to read and institutions in a position to impact on the design of ebook libraries should lobby for the greater adoption of standards that promote full accessibility. Inadvertent barriers are the low-hanging fruit of accessible ebooks; many of the issues discussed above are not intended to discriminate against people with print disabilities and can presumably be addressed through relatively straightforward measures.

The disabling use of CAPTCHAs on log-in forms, for example, is easily dealt with by removing CAPTCHAs altogether. An alternative approach would be to dramatically improve the usability of audio challenges, but this is likely to require significant technological advances. There are likely to be other security measures that can be used to detect automated intrusion attempts without relying on challenges with a high exclusion rate. Similarly, using a textual description – in addition to a graphical lock – to explain that a particular book is not

available would be a very easy fix to implement. It might be more difficult to rework a website to remove extraneous wordage around the display page for a book, but only marginally so.

The more problematic issues we found are those that require significant effort in checking the accuracy of accessible versions of books and those that require rethinking about delivery methods. In the first category, improving the optical character recognition (OCR) systems that have been used to scan physical books into textual forms might be a laborious and expensive process. While newer OCR systems probably do not suffer as much from problems of formatting text properly (in whole sentences and paragraphs with appropriate breaks between words) it will probably be costly for operators of ebook libraries to go back through already digitised works and edit them for accessibility. In some circumstances, publishers may have better quality digital versions that could be made available, but this will not always be the case. Similarly, adding accurate page numbers and textual descriptions of images and tables for all books in a database is likely to be a time-consuming (and therefore expensive) process.

The second category of problems involves changes to the ways in which books are made available. It is preferable, in terms of accessibility, for publishers to make books both easily readable through the web interface for quick access and easily downloadable in unencrypted PDF formats for offline reading. Publishers, however, are likely reluctant to make accessible versions of their works available in whole, for fear that these ‘plain-text’ versions might leak into the marketplace, displacing sales. Publishers can mitigate these risks by making it more tedious to access entire books – for example, only providing single pages or single chapters at a time – but this necessarily makes it more tedious for people with print disabilities to gain access. The use of DRM encryption has become commonplace in digital distribution models

and works acceptably well to enable sighted people to conveniently access entire books through officially sanctioned reading platforms. As we saw above, however, these distribution models significantly disadvantage people with print disabilities.

Only some of the ebook libraries tested offered easy full-text access in a downloadable, accessible form. It is likely to be challenging to convince publishers who do not currently provide such a download option to do so. This might change in the future – particularly since the DRM systems for commercial ebooks developed to date are all trivially removed with modern software (Robinson, 2012), which implies that their actual effectiveness as a deterrent to piracy is likely to be greatly limited. In other industries, DRM has only really disappeared from music, when Apple began to make clear-text MP3s available through its iTunes store. There are other examples of DRM-free digital distribution, but these remain the exception. Changing business practices to such a degree is likely to be a difficult task, and might only be possible through legal intervention.

### **Expanding access to other sectors**

Apart from increasing accessibility of current regimes, there is a clear need for new measures to be put in place to ensure that more books published in the future are made accessible. The most efficient means of doing this – and avoiding the digitisation problem in the future – is to encourage or require publishers to make accessible electronic versions available directly, either through standard commercial channels or in specialist repositories operated by governments, institutions, or NGOs.

Generally speaking, publishers and retailers of books are under no obligation to adopt inclusive design principles to make their books accessible. Because anti-discrimination laws focus on particular relationships (employee to employer, student to educational institution), often the parties who have significant control over the disablement of persons with print

disabilities (such as publishers and retailers) attract no duties. The current structure of anti-discrimination law accordingly means that those who are in a position to provide access at relatively little cost have no obligation to exploit their interests in an inclusive manner.

Anti-discrimination law does require that retailers not discriminate, but the obligations are mostly limited to ‘reasonable adjustments’. This generally means that the retail side of websites must be accessible, but no adjustments are required be made to the content sold on the websites. There is accordingly no duty on ebook publishers or retailers to ensure that the content of goods or services be fully accessible (Harpur 2013). The fact that there has been significant progress amongst the ebook libraries surveyed in this article suggests that the market might continue to move to increase accessibility, but the extent and rate at which change will occur without regulatory intervention or coordinated pressure exerted by buyers remains an open question.

The case for mandated accessibility has historically been relatively weak. The interests of publishers in determining the circumstances in which they make their works available has generally been paramount. Publishers have been fearful of digital distribution and widespread copyright infringement, and states have been reluctant to undermine the ability of publishers to determine how they choose to sell access to their intellectual property (Harpur and Suzor 2013). Exceptions to copyright protection have emerged to enable ad hoc and limited access for people with disabilities, but requiring publishers to adopt principles of universal design is a much different matter.

The reasonable adjustment paradigm is now under threat from new international agreements concerning human rights. One major advantage of the CRPD is that it has created a new disability politics that can be used to drive reforms. The CRPD clearly sets up equality of access as an important goal and entrenches the right to read in the international landscape.

This new human rights paradigm makes it clear that states should strive for universal design and only utilize reasonable adjustments where inclusive design is not practicable (Harpur 2012).

We hope that the experience of ebook libraries in the tertiary education sector illustrates that universal design principles can be embedded more broadly in other ebook distribution models. Some early signs support this hope – Apple’s iBooks include accessible text-to-speech functionality on Apple’s hardware and software platforms, and many other publishers appear to be working to improve accessibility (AIM Commission, 2011). Some backwards steps have also been taken, however – like Amazon’s capitulation to requests from publishers to enable publishers to disable text-to-speech on Kindle devices. It seems likely that the ongoing book famine can be addressed by encouraging and / or requiring publishers to adhere to principles of universal design, but much more work is needed to explore the ramifications of doing so and the appropriate methods which might be employed.

## **Conclusion**

Technology is moving rapidly and creating groundbreaking opportunities to reduce the disablement of persons who are unable to read traditional printed books. The shift to digitisation brings the promise that digital provision of ebooks can be enabling if current trends continues, but also the threat that technical design and business model choices might continue to shut out the print disabled. Our study of the practical human experience of accessibility of scholarly ebook libraries in the humanities and social sciences suggests that for perhaps the first time in history, the technology exists to enable people with print disabilities to enjoy equality of access to the written word.

The right to read is universal, and should be extended to those who do not or cannot attend universities. Creating an inclusive society that enables the right to read is likely to take a significant expenditure of effort and political will, even if these days it is simple to achieve in technological terms. With access improving and recent political successes on the international stage, we suggest that now is the time to push for universal design and equality. With some effort, the first signs of full accessibility that are beginning to become visible in discrete sectors may be extended to enable full access to the written word. How such access can be achieved remains an issue for future research. In particular, is market-based access the preferred way to make material available, when that will necessarily mean excluding many people with print disabilities from accessing many works? Since access to the written word is a right, should this right be protected through more robust and expanded anti-discrimination laws or should copyright laws be amended to enable greater stripping of security measures and distribution of accessible books for the print disabled? Analysing how laws can facilitate the right to read is a project in itself. This article has focused on one aspect of this wider issue and examined the promise of universal design that could be enabled through the digitisation shift in publishing. The right to read is recognised under international law and we argue the realization of this right is technologically more possible than anytime in history. The time is now.



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## Appendix A

1. ACLS Humanities ebook collection
2. Brill ebooks
3. Cambridge Books Online
4. Ebrary
5. ebook Library (EBL)
6. EbscoHost
7. Elgaronline
8. Oxford Scholarship Online
9. Palgrave Macmillan Connect
10. Sage Knowledge
11. SpringerLink ebooks
12. Wiley Online Library