

The EPUB Standard and ebook indexes: better user access to information in ebooks

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Abstract

Ebooks need indexes just as print books do, but in the early days of digital publishing only a few ebooks had active, linked indexes. This is expected to change. The International Digital Publishing Forum (IDPF) manages and develops the EPUB ebook standard. The IDPF Indexes Working Group is writing a standard for ebook indexes that will allow for the provision of active indexes and adds features not possible with print. This paper finds that librarians have a key role to play in the promotion of better ebook navigation options through the selection of ebooks with effective indexes, the assessment of reading devices and provision of advice to users.

Introduction

Indexes have been a fundamental part of non-fiction books for centuries. In the early days of digital publishing, indexes were often omitted from ebooks. The reasons for this included the extra work and cost involved in creating active, linked indexes; the lack of reading device support; and publishers' views that indexes were unnecessary when reading devices had a search function.

The situation is changing. Many commentators have written about the need for indexes in ebooks, and an indexing specification is being developed by the International Digital Publishing Forum (IDPF) for the EPUB ebook standard. This paper explains how this standard will allow for the provision of active indexes, and for the inclusion of features not possible with print.

Librarians have an important role in the selection of ebooks and reading devices for library collections. There has been little discussion of ebook indexes and other navigation options within the library community, as issues to do with technology and licensing have been considered more pressing. This paper discusses why this should change, especially as ebook indexes become more prevalent.

Ebooks and the EPUB standard

Ebook formats

The term *ebooks* is used broadly to refer to all electronic texts, including fixed format PDF documents, and HTML documents read on computers (also sometimes known as o-books). In a narrower sense, *ebooks* refers only to reflowable texts read on portable reading devices.

Fixed format refers to documents in which the same page layout is maintained on all devices. When viewed on a small screen the reader may have to scroll to see all of the content. The most common fixed format is PDF.

O-books (or *online books*) are HTML documents read on computers; these are often printed by users for offline reading.

Reflowable texts are documents without fixed pagination, where the amount of content a reader sees at one time depends on the size of the screen and the settings on their reading device. Reflowable texts usually use the international EPUB standard or proprietary Kindle formats such as mobi.

Reading devices refers to the broad range of hardware on which ebooks may be accessed (read, listened to, etc).

Ebook apps may provide indexes, but do not follow a standard approach and are not addressed here. Peter Meyers (2011a) has written about indexes in ebook apps, and Fry (2010) and Posavec (2010) have spoken and written about the design of the innovative visual index interface for *MyFry* for iPhone or iPad.

Need for ebook indexes

Indexes are 'explorable' documents that provide structured access to content, showing overview topics as well as specific concepts, and adding references between them.

Indexes are an important navigation tool for ebooks because they:

- are explorable (providing a logical, browsable structure)
- concentrate content (concisely wording headings and subheadings to sum up the content being targeted)
- aggregate (gathering content on the same topic that may be described using different words in the text, for example, *farm waste pollution* grouped with *agricultural runoff to watercourses*)
- disambiguate (distinguishing between ‘*Jackey*’ (c.1825–1840), ‘*Jackey*’ (sentenced 1865), and ‘*Jackey*’ (‘*Tallboy*’))
- are selective (only providing links for content judged to provide useful information on a topic, not mere mention of a term)
- provide categories (grouping content, for example, having an entry for ‘gluten-free meals’ in a cookbook)
- contribute to the tone of a book (showing that the author takes the work seriously).

The continued need for indexes has been addressed by Publishing Technology Group, Society of Indexers (2011) and Browne (2012). Information on all aspects of ebook indexing is gathered at the American Society for Indexing (ASI) Digital Trends Task Force (DTTF) website¹.

Commentators have written from various perspectives on the need for ebook indexes.

Agata Mrva-Montoya from Sydney University Press has explained that academics expect indexes in quality books, pointing out that ‘An index and a bibliography have been integral components of scholarly monographs,... This is where they tend to start reading a new book – from the back...’

Geoffrey Marnell (2012), a technical writer, has pointed out that indexes often provide a level of specificity intermediate between the table of contents and search results, and writes ‘...an index is a better guide than a table of contents to the sweep and depth of knowledge available in the text, revealing far more opportunities for discovery and learning.’

The BNA (formerly the Bureau of National Affairs) studied the use of online indexes in legal books and reported ‘In the BNA Usability Study, index users had an 86 percent success rate while text searchers had only a 23 percent success rate. The study included both single answer and more complex research tasks.’ They also found that use of indexes saved time.

Peter Meyers (2011b), a digital book producer, writes ‘In sum, an index is a kind of a collection of pre-made searches: rather than diving headlong and unawares into a search oval’s do-it-yourself void, an index presents would-be searchers with an already assembled, alphabetized list of the 500 or so most common query items.’

Wright (2012) points out that although automated and semi-automated methods are being used for enhanced information access, they cannot yet replace a manually-created index. For example, Kindle X-Ray (available in Kindle Fire) provides information groupings, but failed to group Buffalo Bill with William Cody, while combining, incorrectly, Daniel Burnham senior and junior. This is despite the fact that these relationships are in Shelfari, which Kindle uses as a resource.

The difference between web searching and searching with smaller document sets and a smaller number of users is also important, and has been discussed by Baker (2012). Baker points out that sophisticated search relies on statistical analysis of large numbers of documents, and on user actions following a large number of searches. The larger the set, the lower the statistical margin of error. Search results are further refined using information about the links users follow after performing certain searches. This sort of feedback is not possible with smaller documents, some of which might be used only on a single desktop (or reading device).

Development of indexes for reflowable ebooks

The importance of indexes for the future of ebooks was recognised by the IDPF when they responded to a Charter Proposal from the ASI DTF for the inclusion of ebook indexes in the EPUB standard (IDPF 2012). The development of the EPUB Indexes specification is discussed below.

The advice from Amazon provided on the Kindle Direct Publishing website is that 'Indexes are not recommended at this stage' (Kindle 1996-2013, Lamb 2011). No additional information is provided. Indexes can be created for mobi format ebooks using HTML hyperlinks; however, there is no guarantee that these will be presented appropriately, and they are not identified by reading devices as indexes. Although they are proprietary formats (rather than open standards), Kindle formats are important in the ebook publishing industry because so many books are sold through Amazon. The lack of attention to indexes is therefore disappointing.

This article focuses on the EPUB standard because it is an open, international standard, and because it has a vision for the future of indexes in ebooks. In general, mobi and EPUB formats are very similar, so it is possible that when indexes are implemented in EPUBs, they will then also be implemented in mobi format ebooks.

IDPF

EPUB is an open, international standard, developed and maintained by IDPF, a democratic, membership-driven organisation. IDPF members represent a wide variety of organisations with interests in digital publishing. The list below gives an idea of the range of organisations involved:

- American Library Association, Office for Information Technology Policy (United States)
- Baker & Taylor (United States)
- Chunghwa Telecom Laboratories (China)
- Google Inc. (United States)
- Hachette Livre (France)
- Internet Archive (United States)
- KOBO (Canada)
- Swets (Netherlands)

EPUB standard

EPUB has a strong focus on internationalisation and accessibility (Garrish 2012), and uses existing open standards wherever possible. These include XHTML, Unicode, SVG (Scalable Vector Graphics) and CSS (Cascading Style Sheets). EPUB3 offers MathML, embedded multimedia and scripted interactivity (Kasdorf 2011, Garrish 2011). In addition, EPUB3 aims to maintain backward compatibility with EPUB2.

One key feature of EPUB (and XML documents in general) is the coding of semantic information, rather than focusing on display. For example, instead of making text italic you could encode it as 'booktitle', and instead of indenting a subentry you could encode it as 'subentry'. This allows flexibility to publishers, reading device manufacturers and readers in choosing how to display or interact with ebooks.

Just because a feature is included in EPUB3, it cannot be assumed that it will be supported by all reading devices. In 2012, the Book Industry Study Group (BISG) released an EPUB3 Support grid that shows which EPUB3 features are supported by different devices. Features covered include TOC (table of contents) navigation, metadata (for example, multiple title types), MathML, and Unicode font support.

EPUB indexing specification: developing the standard

The ASI DTF Charter Proposal for an EPUB indexing specification was presented to IDPF in 2011, and approved by the IDPF membership in January 2012. An IDPF Indexes Working Group (IWG) was then formed (IDPF no date), with two ASI members as co-chairs. The IWG includes representatives from ASI, IDPF, DAISY Consortium (the Talking Book standard), publishers and software developers. The author is the representative for the Australian and New Zealand Society of Indexers (ANZSI). The second draft of the specification is undergoing final review (IDPF 2013).

The IWG has been meeting regularly for two years, usually every week for one or two hours, and the working documents for the group are publicly available².

The standard development process includes a number of steps, many of which are overlapping and repeated as required. The process includes:

- Writing the initial Charter proposal indicating the scope of the project, expected timeline, and suggested leads³. This was done by members of the American Society for Indexing.
- Establishment of a working party headed by two leads and made up of representatives of any IDPF member organisations who wish to join in, as well as 'invited experts' from non-member organisations.
- Agreement on the key concepts and terminology.
- Fleshing out use cases, and prioritising them as 'must', 'should' and 'could'⁴.
- Identifying and defining the 'atomic components' of an index (e.g., term, locator, entry).
- Creating a pseudo-code (mock-up) version of an index using simple human-readable terms rather than actual XHTML code to ensure that nothing has been left out⁵.
- Identifying the XHTML and EPUB elements and attributes required to implement the pseudo-code example.

- Writing the specification, including descriptive text and examples. Input from indexers, publishers, technical specialists and others ensured that the specification considered the needs of all user groups.
- Consultation with other working groups, the IDPF Board and members, and when considered appropriate external organisations, with reworking of the specification following suggestions.
- Submission of the draft specification for final review⁶.

Creating an international standard is much more time-consuming than working on a proprietary format, as it is necessary to take into account the potential needs of a variety of publishers and reading device manufacturers. EPUB Working Groups also work to ensure compatibility with earlier versions of the standard and with other open standards, as well as with the work of other groups simultaneously developing different EPUB modules. In the long run, however, the result should be a flexible standard that works for a wide variety of stakeholders.

Dictionaries and Glossaries Working Group, and glindexes

The coding developed for 'glindexes' is an example of communication and cooperation between working groups.

The Indexes Working Group (IWG) started at the same time as the Dictionaries and Glossaries Working Group (DGWG), and has some crossover members who ensure that each group is aware of the work of the other. When the Indexes draft specification was at the final review stage, someone in the DGWG asked what was to be done about glindexes.

A glindex is an index that includes glossary entries; its coding is therefore relevant to both working groups. The IWG had already created an option for editorial text in indexes (using the epub:type 'index-editor-note') at which definition-type text could be included. The solution after discussion between the two groups was to identify a term in a glindex as being both an index term and a glossary term (using the epub:types 'index-term' and 'glossterm') and then to use the epub:type 'glossdef' for the definition. This means that a reading device can treat these components as part of an index, and also as part of a glossary (eg, if definitions are extracted into a separate list).

The example below shows the coding of the term 'adjective' in a glindex. It has a reference to pages 75-77, and also contains a definition of the word 'adjective'.

```
<body epub:type="glossary index">
...
<ul epub:type="index-entry-list">
  <li><!-- implied epub:type of index-entry -->
    <span epub:type="index-term glossterm">adjective</span>
    <span epub:type="index-locator-range">75-77</span>
    <span epub:type="glossdef">A word that modifies, quantifies,
identifies, or describes a noun or words acting as a noun.</span>
  </li>
</ul>
</body>
```

Indexes as parts of EPUB documents

While the core of the Indexes specification defines elements that relate to parts of an index, it also has to provide information about how an index fits into an EPUB document as a whole. This is important when a reading system has to extract an index for display. Because the specification has to cover content provided by many publishers it allows for an index to be the only thing in a document; for there to be an index and content together in a document; for a document to have more than one index (for example, an author index and a subject index) and so on.

EPUB indexing specification: core functionality

The main aim of the EPUB indexing specification is to enable the provision of active, linked indexes in ebooks.

The first step for this will be the provision by content providers (authors or publishers) of links within indexes. This may be done using XML editors, HTML hyperlinks, or page layout programs such as InDesign. Browne and Wright (2013) have compared the different methods that can be used to enable the generation of ebooks with active indexes in HTML, PDF and EPUB formats.

The main difference is between approaches that use embedded indexing, and those that link to anchors within the text:

- *Embedded indexing* means that the index entries themselves are inserted into the text. This means that if a portion of text is moved within the document, the index entries embedded in that text will move with the text. Embedded indexing can be done with MS-Word, XML editors such as Oxygen, FrameMaker, and InDesign.
- *Links to anchors* are created in the same way that hyperlinks on the web are created. Linking requires the addition of anchor points within the text; this can be done automatically for every section or paragraph, but is usually done manually for indexing to specific words within the document. The linking and indexing can be done as separate steps, by different people, meaning that this approach fits in well with the use of dedicated indexing software packages (SKY Index, CINDEK and Macrex) which are used by many professional indexers.

Wright et al. (2013) have created tables showing the different indexing tools and the output formats that can be created using these tools. These tables are being kept up-to-date on the ASI website.

The new standard will make it easier for a reading device to see which parts of the content within an ebook make up an index, and to present the index appropriately to users. For example, a reading device might present a link to the index on every page, or might make the index accessible whenever a term in the text has been selected.

Some of the problems to date with ebook indexes have been simple issues to do with page layout and incorrectly formatted indents. The EPUB indexing specification will provide a standard method for coding different parts of an index (main entries, subentries, and so on), making it easier for publishers to provide one format for all EPUB-compliant devices, and for reading device manufacturers to focus on the best ways of presenting standard content, rather than having to deal with a variety of inputs.

Even once a standard has been developed or expanded, it is still of no use until both publishers and reading device manufacturers implement it.

Kleinfeld (2013) has described the implementation of EPUB3 by O'Reilly (a publisher of technical books) a year after the specification was approved. He explains the need for internal workflows to change, and also the requirement for reading devices that formally support the standard.

At the same time that publishers develop content encoded according to a new standard, reading device manufacturers have to redesign their devices to make them EPUB-compliant. Some features must be provided for a device to be able to say it is EPUB-compliant; in addition, there are implementation suggestions that are desirable, but optional. Every extra requirement needs extra coding work and increased processing power. Reading device manufacturers therefore have to balance the costs of implementing changes with the requirements their users have.

To reduce the load on individual manufacturers, the Radium Foundation was established⁷. It is an open-source consortium developing EPUB-related software so that all members do not have to create the basics themselves.

EPUB indexing specification – enhanced functionality

As well as providing for a functional, active index, the EPUB indexing specification also suggests enhancements that will provide ebook indexes with features not available in print books.

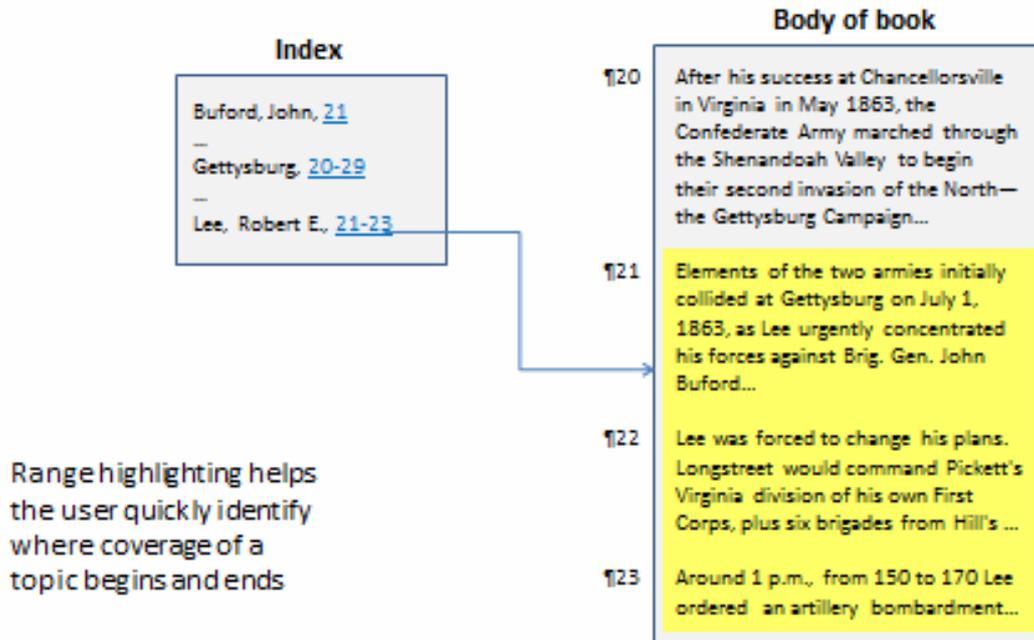
Enhancements include:

- Range highlighting
- Better navigation to groups within the index
- Information about the target of a term
- Index filtering
- Generic cross-references

Range highlighting means that the content referred to by the index entry could be displayed differently, eg, with a coloured background as shown in Figure 1 (next page). This would make it easier for users to quickly see where the relevant content starts and finishes.

Figure 1

Range Highlighting



Better navigation within the index can be provided by enabling the expansion or contraction of groups; for example, showing or hiding all of the entries starting with 'A' or 'B'. This will make indexes easier to browse, especially for users with reading impairments.

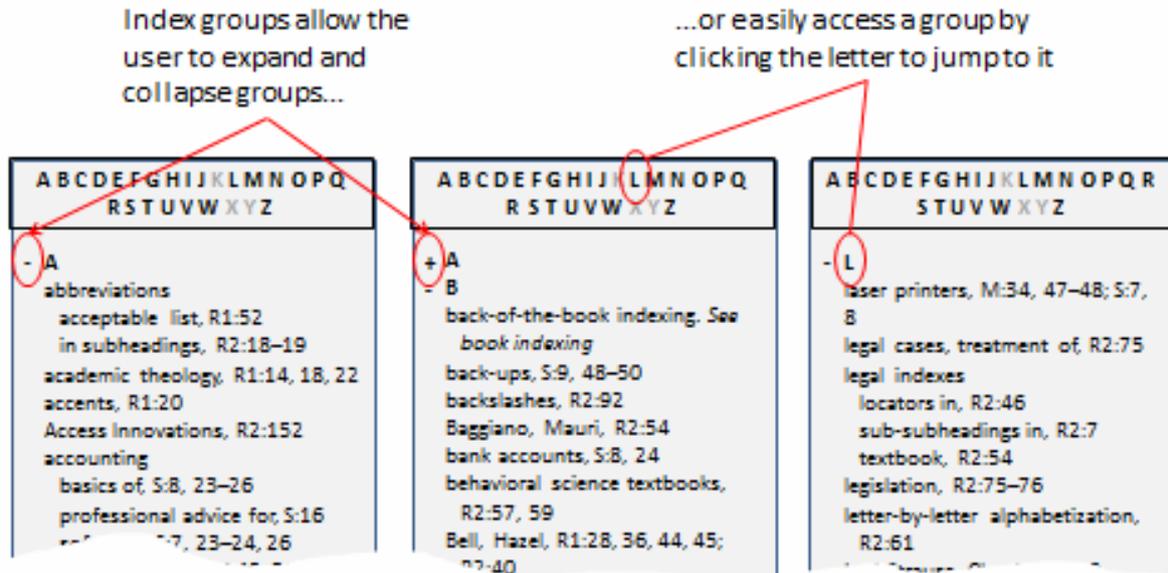
George Kerscher is the President of the IDPF, Secretary General of the DAISY Consortium and chair of the DAISY/NISO Standards committee. In response to a discussion by the IDPF Indexes Working Group, he gave the following description of searching within groups on his iPhone, and envisaged a similar process for searching within ebook indexes, which he thought would be wonderful 'for everybody, not just blind folks'.

I expect I would get to the beginning of a letter and then navigate to the item in alphabetical order. So, on my iPhone using VoiceOver I have about 2,500 names in my address book. I get to the letter I want and do a three finger swipe up or down to move me by about 20 names. Once I get close, I do a swipe right or left to get to the one I want. I would think that an index would work in much the same way (Kerscher 2012).

Figure 2 (next page) shows how contracting a group and then jumping to another group could be implemented.

Figure 2

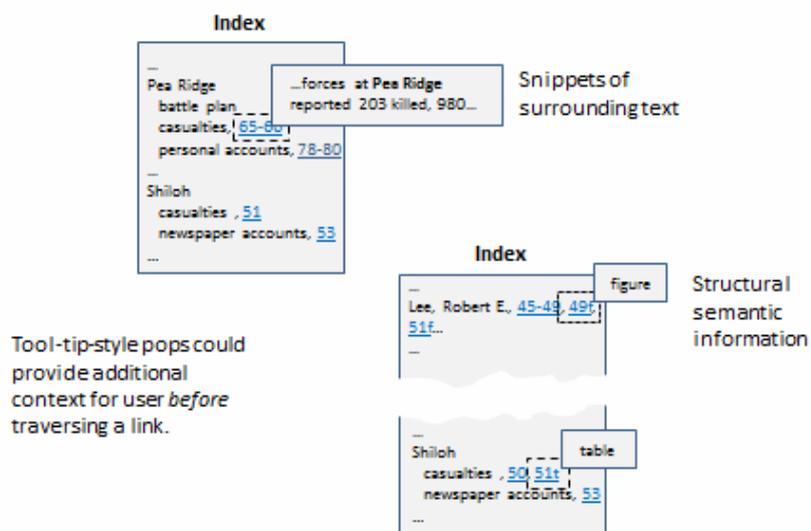
Better Navigation



Information about the target of a term can be provided in popup boxes or other displays at the index entry. In Figure 3, one popup box shows an excerpt from the target (that is, the content the user will be taken to) while others show something about the nature of the target (whether it is a figure or a table).

Figure 3

Contextual information

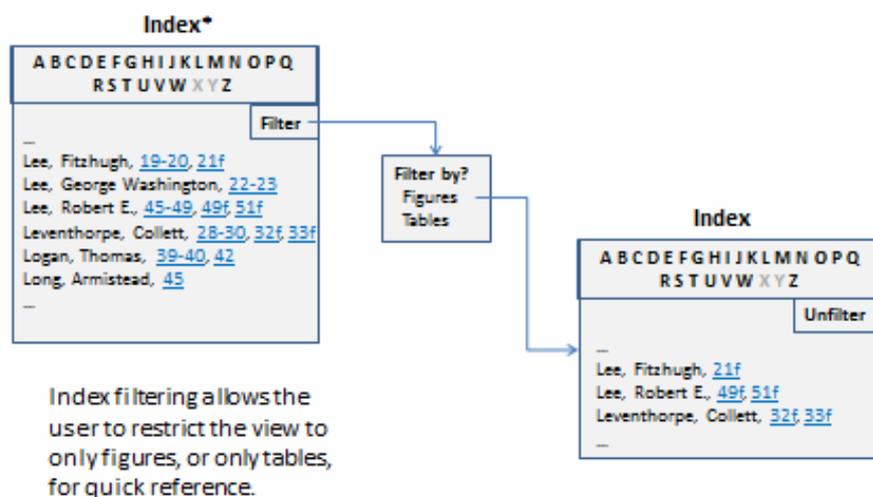


Index filtering. If index entries have been tagged, a user will be able to filter the index according to the tagged characteristics. For example, if index entries are tagged to say whether they are names, or places, or subjects, a publisher will be able to provide a combined index with all of the entries, and users will be able to filter the index to show only the specific type (eg, places) they are interested in.

Filtering will also be possible based on characteristics of the target of the index entry; for example, showing entries for all figures (as in Figure 4), or all photographs. It will be easier for users to quickly get to both the subject matter and the type of content that they are interested in.

Figure 4

Index Filtering



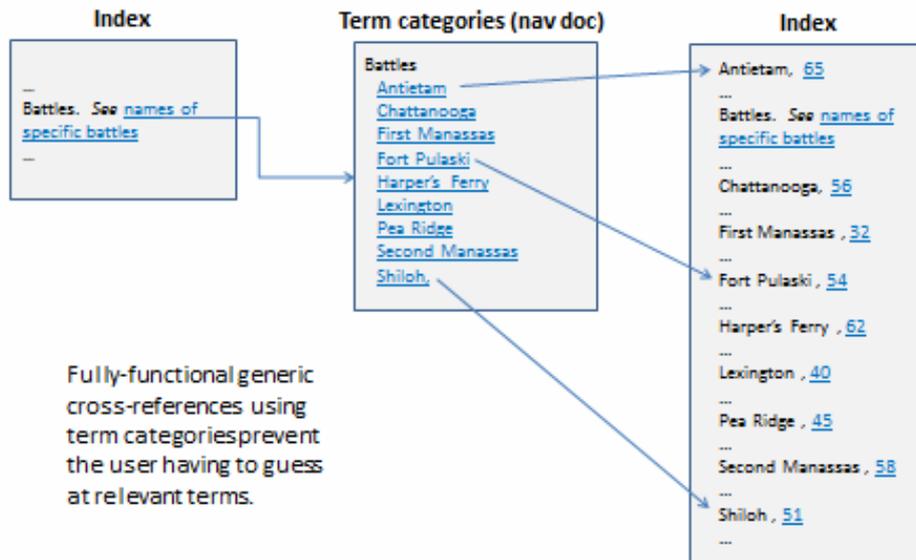
* "f" following a locator indicates a figure

Generic cross-references refer users to a category of terms rather than to specific terms. They are concise, but do not provide enough information for users who do not know what terms to expect in a category. For example, if a user sees the reference 'emotions, see also specific emotions', they have no idea which of the many possible emotions have been included in the index, nor how they have been worded (for example, is there an entry for *envy* or *jealousy*, or both, or neither?)

The EPUB standard allows for the provision of a generic cross-reference that can be expanded to show links to all of the members of the category. In Figure 5 (next page), the brief reference is 'See names of specific battles'. When users click on this link, they are shown entries for all of the battles that have been tagged by the indexer.

Figure 5

Generic Cross-References



The index to the draft Indexes specification⁸ includes generic cross-references. Because the specification is displayed on the web it is not an EPUB index, but it does demonstrate EPUB coding. If you click on the cross reference at the entry 'epub:type attribute values' you are taken to a list of epub:type attribute values, from which you can select terms of interest for further searching.

Cross-document linking

There is not yet an EPUB standard for linking between different documents on different devices. When this is implemented, it will be possible for one index to link to multiple documents. This could be used for a cumulative index to a serial, or to books in series. When you buy an ebook, you could optionally see entries for other books in the series in the index, that way deciding whether you will buy more of them. You can get an idea of the possibilities in the combined index to five books by Seth Godin (BIM Indexing & Proofreading Services no date).

In the future, this could also allow people to make a common index for all the ebooks in their library, or to enhance indexes for the ebooks they are currently using.

Librarian advocacy for quality ebook indexes

Librarians and indexers should be natural allies in the ebook environment: indexers create navigation tools for books, and librarians select books that are appropriate for their users and provide guidance in their use. It should matter to libraries that the books they contain are as useable as possible by as wide a range of readers as possible.

Librarians have traditionally valued the presence of indexes in print books, and will often only buy reference books that have indexes. Catalogue records usually indicate the presence of indexes. When considering ebook purchases, however,

librarians have had so many other issues, such as technology and licensing, to consider that the question of quality navigation mechanisms has slipped under the radar. In addition, purchase of books in bulk through aggregators limits librarians' decision-making with respect to selection of individual books. 'Ebook-preferred' policies fail to recognize that an ebook is not always the equivalent of a print book, and that features such as indexes may be missing from the electronic version (Coe 2013).

According to Chen (2012), many students find e-textbooks 'clumsy' and do not use their interactive features. Users want effective navigation options, and some may need support in selecting the best approaches for their research style and their needs at the time.

The IFLA report *Key issues for e-resource collection development* (Johnson 2012), in the section on Functionality and Reliability (2.3), says:

The e-resource interface should be user-friendly, easy to navigate and intuitive. User-friendly resources often include such features as online tutorials, introductory screens, navigation aids and context-sensitive help...The screen design should be easy to read and follow and consideration should be given to the similarity of the resource interface to others already in use and with which users are already [familiar].

One advantage of ebook indexes as navigation aids is that users of print works are familiar with them; they are also the most effective tool for for specific, targeted searches. Many users also wish for standardised navigation. For example, Ford (2012) notes with respect to legal publications that 'At this early stage in the ebook cycle, navigability is an issue, with some users of legal ebooks suggesting all legal publishers should standardise navigation.'

As librarians have had to adapt to the digital world, so have publishers. Many have been struggling with major issues to do with the creation and marketing of ebooks, and have given little thought to ebook indexes. Temporary solutions have been:

- to omit indexes
- to include the index from the print version with the page numbers removed
- to include the index from the print version with the suggestion that terms from the index may be located using the reading device's search feature⁹

Some publishers have created linked indexes using HTML hyperlinking, but these have not always been well displayed by reading systems.

The lack of quality indexes in some ebooks has led some users – and librarians – to conclude that indexes are not a fundamental part of ebooks, or that it is not possible to provide them. This is not true. While there are technical challenges in providing linked indexes for ebooks, these are not insurmountable. Publishers are more likely to make the effort if the feedback from users and librarians shows that good indexes are valued when they are provided.

This is an especially important time for ebook index advocacy. With the release of the EPUB Indexes specification expected soon, publishers will have more certainty that the effort they put into the creation of linked indexes will result in a well-presented product for their users. Uptake of a new standard can be slow because of the costs and effort involved, but will be encouraged by support from a range of stakeholders, including librarians.

This paper finds that librarians have a key role to play in the promotion of better ebook navigation through:

- selection of ebooks with effective navigation options
- selection of ebooks that use open standards
- selection of accessible ebooks
- assessing reading devices for library purchase and promotion
- providing feedback to publishers, booksellers and ebook aggregators on these choices.

Browne and Coe (2012) have further explored the role of librarians in ebook selection.

Selection of ebooks with effective navigation options

Librarians should look for ebooks with a range of navigation options, including tables of contents, indexes and good browsing. Some of these features will be apparent from the description of the book, although it is currently not clear when a publisher writes 'contains index' whether this index is actively linked. For important acquisitions, it is worth looking at a sample of the book to check that its structure works effectively as an ebook, for example, to see whether internal references are linked, and whether footnotes are appropriately coded. Over time, it will also become clearer which publishers have a commitment to quality ebook development.

Selection of ebooks that use open standards

Selecting ebooks that follow an international standard ensures they will be readable on a wide variety of devices and users will become familiar with their features. EPUB is recognized as the international standard for reflowable ebooks and is supported by most dedicated e-book readers (Amazon Kindle devices are the major exception); EPUB reading software is also available for all modern smartphones.

Selection of accessible ebooks

Accessible ebooks are those that can be used effectively by people with print disabilities¹⁰. This includes people with both permanent and temporary visual, cognitive and physical impairment. Librarians have an important role in the selection and promotion of accessible ebooks.

One of the recommendations of the Association of Research Libraries Joint Task Force on Services to Patrons with Print Disabilities (Association of Research Libraries 2012) is that 'Accessibility should be a central decision factor in choosing information products and services.' The ALIA *Ebooks and lending issues paper* (2013) has as its seventh point 'providing equity of access to compensate for societal inequality'; selecting for accessibility has a role to play in fulfilling that goal. Suzy Haines (2013) points out that 'accessibility means a bigger audience for publishers, booksellers and libraries'.

EPUB3 has been described as a 'marriage of EPUB2 and the DAISY Consortium's standard, which is designed specifically for accessibility' (Enis 2013). Selection of books using the EPUB standard will enhance accessibility for people with print disabilities. Involvement on the IWG by a representative from the DAISY Consortium¹¹ means that features of the EPUB Indexes specification have been designed to meet the needs of the print-disabled.

One of the important coding requirements for accessible ebooks is that they use semantic markup, that is, that they encode components of an ebook to say what they are rather than how they should look. Semantic markup will be a feature of many ebooks for Kindle as well as those using EPUB coding.

Even when content is provided in an accessible format such as EPUB3, it may be wrapped in digital rights management (DRM) software (technological protection) that prevents a device with screen-reader software from getting to the content. In a comment added to an article on borrowing ebooks from libraries, KT Bradford (2013) wrote about some of the manipulation he performs on ebooks to make them accessible. These were:

- putting each sentence on a new line
- changing to a font such as OpenDyslexic
- using text-to-speech
- using voice scripting to minimise aggravation of repetitive strain injuries
- selecting text for manipulation (for example, folding material that has been understood, and bookmarking material to return to).

Ebooks with no DRM are best for accessibility; alternatively, a DRM scheme that does not block transfer for accessibility purposes should be used. IDPF is in the process of developing an optional, lightweight content protection mechanism (EPUB LCP) which will require a passphrase for sharing of content¹².

Unless a publisher chooses to make a statement, there seems to be no way to quickly tell whether a book for sale is DRM-free (Wikert 2013), although some publishers, such as O'Reilly, are known to publish all their books without DRM.

Assessing reading devices for library purchase and promotion

Librarians have to evaluate reading devices before purchase or in order to advise users.

The Association of Research Libraries Joint Task Force on Services to Patrons with Print Disabilities (Association of Research Libraries 2012) made the following comments on reading device accessibility:

E-book readers can vary greatly in terms of their support of accessibility features. The most accessible devices include screen magnification, text-to-speech functionality, and navigation features enabling individuals with print disabilities to access the content natively. The pairing of accessible e-book formats with accessible reading devices is key.

Libraries that are considering e-book device lending as a service are strongly encouraged to examine the current state of accessibility support in the e-book device marketplace and opt for lending devices that have accessibility features built-in.

By selecting reading devices that fully implement EPUB, we can ensure the widest possible access to books. The BISG EPUB 3.0 support grid should be checked before purchasing reading devices for library use.

A campaign by National Federation of the Blind to make Kindle books more accessible (<https://nfb.org/kindle-books>) has had some success, with improvements from the 2013 version of Kindle Fire HD¹³.

Providing feedback to publishers, booksellers and ebook aggregators

The Association of American Publishers supports the EPUB3 standard as the accepted global distribution format for ebooks ...and is working towards this goal with “retailers, digital content distributors, device makers, reading systems providers, assistive technology experts and standards organizations” (Digital Book World 2013).

Ebook improvements and the use of international standards require publishers and reading device manufacturers to work towards compatible goals. Feedback from librarians to booksellers and publishers about the ebook and reading device features that are important to them may encourage publishers to provide better navigational tools and other accessibility features in the ebooks they create.

To support the optimal development of ebooks, librarians need to ask:

- Does this ebook have all of the features present in the print book?
- Does this ebook have a range of quality navigation options including an index if appropriate?
- Does this ebook use an open, international standard (currently EPUB)?
- Is this ebook accessible for the print-disabled?
- Can this ebook be read on a variety of reading devices?

Conclusion

After a slightly shaky start, ebook indexes are set to thrive when the IDPF EPUB indexing specification is launched (expected in the first half of 2014). It will then be up to publishers and reading device manufacturers to implement the core and extension features of the specification. Given the experience with implementation of EPUB3, this may take up to a year.

Librarians have a major role in selecting ebooks and ebook readers that will provide the best possible navigation and user experience for readers, and in advocating for the inclusion of quality indexes in ebooks.

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⁹ An example is <http://ebooktest.blogspot.com.au/2009/08/epub-death-of-index.html>

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