

# Open-system versus closed-system indexing

## A vital distinction

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*Significant contrasts between open-system indexing (often known as periodical indexing) and closed-system indexing (commonly called book indexing) are outlined in a narrative and detailed in a table. An examination of the coverage of the two systems in major indexing textbooks and standards reveals considerable confusion.*

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### Introduction

#### *Terminology and definitions*

Indexers tend to think of their work in unitary terms: indexing. But there are two distinct processes, not one: open-system and closed-system indexing. We cannot define either process succinctly. In fact, despite their being extremely well known, the two systems do not even have standardized names. One is usually called *periodical indexing* while the other is mostly known as *book* or *back-of-the-book indexing*. We can find many names in the literature for the same or similar concepts (see Table 1, Row 1); none completely characterizes the two indexing systems. The system used for periodicals may be applied to many types of document, even books, and may also be employed for items not commonly considered documents, for example, museum objects. The system of indexing called *back-of-the-book* may be used for documents other than books, and the resulting products do not always appear at the backs of books. We can index a serial as though it were a monograph. Similarly, we can index a collection of monographs as though they were serials, but librarians generally call that activity *subject cataloging*, not *indexing*.

We might say there is only one type of indexing, not because open-system and closed-system indexing are really the same thing, but because open-system indexing is far closer to subject cataloging than to indexing. As Jessica Milstead reflects:

... that cataloguing and indexing are the same thing ... is mildly heretical even today. They both provide subject access to the contents of documents; the access provided by the tool commonly known as a catalog may not be as thorough as that provided by the tool known as an index, but they are different in degree, not in kind. No single word has only the general connotation of provision of subject access without regard to the specific type of tool; indexing comes closest. (Milstead, 1984: 4)

If the term *indexing* were reserved for closed-system indexing, and open-system were called something else – let us say ‘specialized subject cataloging’ – students might gain a better understanding of the field. We can only echo Bella Hass Weinberg’s ironic quip: ‘There is a serious lack of vocabulary control in the literature on controlled vocabulary.’<sup>1</sup>

Why has so little attention been paid to the contrast between the two systems? Perhaps one reason is that much of indexing theory concentrates on the *product*, the index, rather than the *process* of creating that product. As Table 1 indicates, there are a number of differences between the two products but there are greater differences still between the two processes. Another reason for the lack of attention may be, as suggested above, the inadequacy of the terminology; it is difficult to recognize a concept that has not been distinctly named. Also, individuals who perform open-system indexing – frequently librarians – tend to have backgrounds different from those of back-of-the-book indexers, who are often subject specialists. Relatively few people do both types of indexing. Consequently, discussions about the two systems tend to take place in isolation, attracting different participants. Practitioners do not always have theoretical knowledge; open-system indexers may be completely unaware that the process they follow differs from what closed-system indexers do, and vice versa.

Possibly the first use in the indexing literature of the terms *open* and *closed* is in Barbara Preschel’s paper given at the American Society of Indexers (ASI) 1988 conference (Preschel, 1989: 56). As early as 1983, however, I taught courses and gave lectures using an earlier version of the table presented here, which distinguishes between the two systems and uses those names. The dichotomy between the two indexing systems has always struck me as fundamental and obvious but, to my surprise, other authors have not made this distinction the basis of their analyses. I found it necessary because – regardless of whether they were totally new to the information field or were professional librarians hoping to add indexing to their skills – students seemed to need a clear distinction between the two. It was in this area that they made some of their most serious mistakes. While the librarians understood open-system indexing easily – since it duplicated quite closely what they knew about subject cataloging – they frequently attempted to apply open-system solutions to back-of-the-book indexing problems.

#### *Indexing purpose*

Probably the key to distinguishing the two systems is considering the purpose of the indexing. Closed-system indexing

assists people in finding a unit or units of relevant information *within a document*, while open-system indexing is designed to facilitate the retrieval of one or more *documents* that contain relevant information. Jessica Milstead refers to somewhat similar concepts as *information unit indexing* and *bibliographic unit indexing* respectively (Milstead, 1984: 93).<sup>2</sup> Of course, open-system index users are also seeking information, not documents *per se*, but first they must discover which documents contain the information they want. Once they know the names and bibliographic or other descriptions of those documents, open-system index users often get no further guidance on the exact locations of the information they seek, since there is rarely any additional indexing for the individual documents. The users must examine the entire documents, which fortunately are usually considerably shorter than those indexed by closed-system schemes. A person does not generally need to find a document that has been indexed according to closed-system techniques because the index is usually at the back of that very document. In other words, the index user already has the indexed document in hand. Another significant difference is that closed-system indexing usually deals with one document at a time while open-system indexing is applied to many documents – perhaps thousands or even millions.

### *Aboutness*

The two indexing systems differ considerably when we examine the ‘aboutness’ factor. We cannot say that most of the terms in a closed-system index express what the document as a whole is about; rather, the terms indicate that something on the subjects indicated by the terms may be found in the document. The information we retrieve may be a relatively minor aside although, if it is too insignificant, the indexer has committed an error of judgment by making an entry for that topic. Sometimes a term for the main subject of a document (i.e. a term that does convey ‘aboutness’) cannot even be found in the index because the indexer has analyzed all the aspects of the subject and managed to put the entries under them without any nebulous extras remaining. If a term designating the main subject of the document is in the index and is followed by a great many locators, that may well be a sign of inadequate indexing.

Open-system indexing is quite the opposite; most *subject* entries in an open-system index express ‘aboutness’. Author entries do not usually express ‘aboutness’ although, of course, an author or other creator may also be the subject of an article or letter. If we find a locator under a subject term, we can generally assume that the document we retrieve will be about the topic that term signifies, either totally or substantially; if the term is not a major topic in the document, the indexing is likely to be inaccurate.<sup>3</sup> It is theoretically possible to apply so many terms to a document in an open-system project that some of these terms cease to express ‘aboutness’ and, instead, merely indicate the presence of information on a subject in the document. Generally, however, indexing to this extent is too expensive to carry out. Furthermore, index users might consider such indexing to be misleading because they would find less information on the subject than they expected. If indexers of, say,

periodical articles, continue to add terms, the results will still differ from those of back-of-the-book indexes. Merely adding entries does not transform open-system schemes into closed-system indexing, because other open-system characteristics, such as pre-designed controlled vocabularies and lengthy locators, remain.

### *Duration and form of entries*

In general, open-system indexing is carried out over a longer period of time than closed-system indexing, continuing for years, decades, or even centuries. By contrast, while indexers may require many months to complete some complex closed-system indexes, most such jobs usually extend for only days or weeks. Here we are discussing the periodicity of the indexes, not the periodicity of the items being indexed, factors that may easily be confused.

If we were to look at a series of entries taken from a variety of indexes, we would not necessarily be able to determine whether the indexes were open- or closed-system. Some entries, however, clearly belong only in closed-system indexing. Users are unlikely to encounter entries such as ‘Bell, Vanessa: finds Euphemia Lamb’s scattiness extreme’ (Holroyd, 1996: 693), or ‘Buffett, Warren, investment in Washington Post Company’ (Graham, 1998: 628), or ‘autism, appropriation of entire skills or roles’ (Sacks, 1995: 317), in open-system indexes. There the entries would more likely resemble: ‘Bell, Vanessa – friends and acquaintances’, ‘Buffett, Warren – investments – Washington Post’, and ‘autism – characteristics’. Terms and modifications in open-system indexes, which must often be re-used for other documents, must generally be standardized. ‘Finds Euphemia Lamb’s scattiness extreme’ is a subheading that cannot be applied to other entries, whereas ‘friends and acquaintances’, or ‘relationships’, or ‘social life’, or some other general formulation can be a subheading under any personal name entry.

### *A continuum from closed to open systems*

Indexing projects do not always fit neatly into the open/closed dichotomy. Indexes to books by multiple authors, such as encyclopedias and conference proceedings, may not exhibit all the characteristics of closed-system indexing. Similarly, indexes to individual periodicals may not display all the features of open-system indexing. Indeed, the latter may be closed-system indexes. Hans Wellisch (1995: 84–91) deals with this issue in a section entitled ‘The continuum of verbal texts’.

When we consider the distinguishing characteristics of the two systems, we see that they are often not fundamentally different; rather, for each characteristic there may be a continuum. Consider, for example, rows 6, 37 or 41 in Table 1. Furthermore, while Table 1 reports what is generally the case, it also mentions exceptions.<sup>4</sup> For example, one distinction is that, in open-system indexing, the indexing vocabulary exists prior to the indexing of the items. However, if the indexers are initiating an indexing project, they may design the indexing language and the index simultaneously. Thus, even that seemingly fundamental distinction – the timing of vocabulary development – evaporates in some situations. Generally, though, we can characterize a project as either open-system or closed-

**Table I.** Differentiating the two main indexing processes

## A. General characteristics

Attribute	Closed-system indexing	Open-system indexing
1. Terminology in the indexing literature for concepts similar to open- and closed-system indexing	Book indexing, back-of-the-book indexing, monograph indexing, single document indexing, information unit indexing, in-depth indexing, exhaustive indexing, <sup>5</sup> one-time indexing, internal indexing, synchronic indexing, closed-end indexing, small website indexing.	Periodical indexing, serials indexing, newspaper indexing, multiple document indexing, collections indexing, bibliographic unit indexing, database indexing, summarization indexing, continuative indexing, continuing indexing, ongoing indexing, diachronic indexing, open-end indexing, large website indexing, whole document indexing.
2. Similarity to other information processes	Few similarities to either subject cataloging or classification.	More similar to subject cataloging in libraries than to closed-system indexing.
3. Purpose	To facilitate finding a unit or units of relevant information <i>within a document</i> .	To facilitate finding one or more <i>documents</i> that contain relevant information.
4. Application	Usually applied only to one document (print or non-print) at a time, although the same <i>general</i> scheme could be applied to a series of closely related documents.	Applied to a collection of documents, print or non-print.
5. Aboutness	The indexer <i>analyzes</i> the contents of the document. Individual terms cannot be said to indicate the 'aboutness' of the document as a whole, although they do indicate what passages within the document are about.	The indexer <i>describes</i> the documents, although multiple descriptors, taken together, become somewhat analytical. Terms and characterizations usually apply to the unit as a whole (although, in some cases, indexers enter terms for minor concepts).
6. Exhaustivity	Indexing should be comprehensive and exhaustive; there may be hundreds or even thousands of headings and subheadings, and so, ideally, little or nothing of significance is omitted from the index unless the indexing has purposely been selective.	Indexers (human or automatic) assign relatively few terms to each document, as compared to closed-system indexing, and so a lot of information is left unindexed. (In some projects, especially in electronic systems, indexers are less restricted.)
7. Locators	In print media, usually short, generally just numbers referring to pages, or, less frequently, to sections, such as numbered paragraphs.	In print media, frequently lengthy, often complete bibliographic references; in web-based systems where the locators are embedded hyperlinks, users may never see the actual locators (URLs). <sup>6</sup>
8. Duration of indexing projects	Typically relatively short, often only a few weeks.	Typically lengthy, often months or years. Projects may continue indefinitely.
9. Inconsistencies	If there are inconsistencies, they are a sign of poor indexing.	The editor(s) attempt(s) to remove inconsistencies but these are, to some extent, inevitable because of the size and duration of the project and the number of people involved.
10. Number of indexes	There is usually a single index that combines many types of entries. Indexing authorities recommend single indexes in most cases.	There are often several indexes in a project, e.g. personal name, organizational name, chemical formulae, author, subject. Users of electronic systems, especially, may be unaware that there is more than one index.
11. Number of products	One – the index (which uses the vocabulary), although the indexer may separate out the vocabulary for convenience while editing.	Two separate products, the vocabulary and the indexing (using the vocabulary), but integrated for users. The vocabulary may be designed by different personnel and may be offered separately for sale or use.
12. Time lag	The index is usually published at the same time as the indexed document.	Indexing often takes place a month or more after the indexed documents have been published; however, automatic classification or indexing tools for websites may operate virtually simultaneously with publication; also, authors may assign subject metatags as part of the publication process.
13. Agency originally contracting for the index	Usually the publisher of the document to be indexed.	Usually indexing/abstracting services or other value-added publishers, not the publishers of the documents to be indexed.
14. User proximity to the indexed documents	Users usually have both the index and the indexed document in hand at the same time.	Except in website indexing, users often do not have the indexed documents at hand but obtain them later because the index indicates they would be useful.

Table continues overleaf

Table I (continued) B. Indexed material

Attribute	Closed-system indexing	Open-system indexing
15. Subject matter	Usually covers a few closely connected themes.	Usually covers wide-ranging themes. Sometimes, as with general magazines, the themes are not connected in any way.
16. Production time	Usually written or otherwise produced over a short period of time, although a few creators take years or even decades to produce their works.	May be written or otherwise produced at many different times. Many decades may separate documents indexed in the same project.
17. Number of authors or other creators	Usually a single author or joint authors. Anthologies, conference proceedings and encyclopedias are among the exceptions.	Usually a great many authors or other creators who may have no connection with one another.
18. Creators' styles	The document is generally consistent in terminology, spelling, hyphenation policy, abbreviations, etc. Anthologies, conference proceedings and encyclopedias may be among the exceptions.	Usually considerable inconsistency in terminology, spelling, hyphenation policy, abbreviations, etc., especially if the documents have many different publishers.

## C. Vocabulary and syndetic structure

Attribute	Closed-system indexing	Open-system indexing
19. Context	Self-contained. The vocabulary and syndetic structure relate entries to the intentions of the creator(s), not to the world of knowledge as a whole.	Not self-contained. The vocabulary and syndetic structure relate entries to a larger context, if not to the world of knowledge as a whole.
20. Sources of terminology	Primarily the document being indexed. Other sources, such as dictionaries or users' vocabularies, are more helpful for cross-reference construction than for term selection.	Various, e.g. other indexing services (with permission for using copyright materials), subject experts, existing literature in the field, users' vocabularies, as well as the documents being indexed.
21. Method of term selection	Except for terms applied to implicit concepts, the indexer <i>derives</i> or <i>extracts</i> terms from the document being indexed but exercises choice. Literary warrant governs much term selection.	In most cases, indexers primarily <i>apply</i> or <i>assign</i> terms taken from a prescribed vocabulary to the documents they are indexing. User or non-literary warrant governs much term selection. Some systems use keywords.
22. Timing of vocabulary development	Always after the document has been produced, unless the creator is also the indexer or is compiling suggestions for the indexer.	The vocabulary and syndetic structure (which are usually in flux) frequently exist prior to the publication or even the production of the documents.
23. Indexer participation in vocabulary development	The indexer decides what terms are appropriate for the document and then uses them consistently. The creator(s) and/or editor(s) occasionally provide some input.	Indexers usually must use prescribed terms and cross-references. The editor(s) decide(s) on changes to the vocabulary, although some systems allow indexers to suggest terms or add 'free terms'.
24. Specificity	Far greater than in open-system indexing.	Rarely as great as in closed-system indexing except in electronic systems.
25. Coordination of terms	Pre-coordinated.	Either pre- or post-coordinated. In electronic systems, terms are usually post-coordinated.
26. Duration of vocabulary	The indexer creates entries for each document and cannot reuse a complete vocabulary from a previous project.	Indexers use an established (though changing) thesaurus for the duration of the project – years or even centuries.
27. Continuity of terminology over time	As the document and its indexing constitute a self-contained closed system, the indexer need not be overly concerned about the future when developing the vocabulary.	To keep the prescribed vocabulary usable for as long as possible, designers try to avoid modish terms that may not endure; however, the vocabulary development policy must accommodate neologisms in rapidly changing fields, such as technology.
28. Updating the vocabulary	Unnecessary, unless there is a new edition, which usually necessitates a completely new index, not a revision.	Must be carried out constantly but is difficult and/or slow to accomplish. Although the 'birth dates' of new terms should be recorded in both the index and the thesaurus, this practice is often neglected. Dates of changes in terminology (e.g. from <i>wireless</i> to <i>radio</i> ) are, however, frequently recorded.
29. Use of terms	All terms in the final product are used for indexing; they either have locators following them or they are in cross-references.	A good development policy ensures that terms that never actually get used – either because no indexed documents deal with those subjects or because the terms or subjects are no longer current – get deleted after three, five, or more years.

C. Vocabulary and syndetic structure (continued)

Attribute	Closed-system indexing	Open-system indexing
30. Creation of cross-references	Done with knowledge of the document. Indexers, knowing all the subjects covered in the document, can create as many cross-references as are necessary to assist users, within the space available.	Often done on the basis of semantic relationships. The editor(s), not knowing what subjects will appear in future documents, must be cautious about creating some types of cross-references, such as those referring from the specific to the general. Some cross-references will lead to information of which users have previously been informed.
31. Deletion of cross-references	Indexers can delete some cross-references if the targets <sup>7</sup> will file close to each other or if they do not lead to additional information.	Not knowing how many entries there will be under each term, the editor(s) must keep in the thesaurus cross-references to terms that file adjacent to each other.
32. Double posting	Preferable to cross-references in cases where it can be done economically (in terms of the space used) to spare users the nuisance of double lookups.	Usually does not occur, except in electronic systems. Indexers choose the most appropriate terms and create cross-references for terms not chosen. (Double posting in website indexes, however, significantly increases user success.)
33. Scope notes	Rarely used. Qualifiers, however, are used.	Relatively common, especially to aid indexers.
34. Form of entries	Usually primarily natural language. Syntax is frequently devised on an ad hoc basis. Subject headings and, especially, subheadings (coined modifications) are often highly particularized and may be relatively lengthy, e.g. 'Hammarskjöld, Dag: speech to United Nations General Assembly on the Congo crisis, August 1961'.	Entries are often governed by a controlled vocabulary. Subject headings and subheadings frequently follow a standardized format and are often brief, e.g. 'Hammarskjöld, Dag – Addresses, messages, etc.' Some systems use keywords (i.e. an uncontrolled vocabulary).
35. Subheadings	Can sometimes be converted to modifications or eliminated altogether if there are few locators under a heading.	Cannot be converted to modifications or eliminated because the editor(s) cannot predict the amount of future information on any specific subject.
36. Entries for document creators	Rare, except for autobiographies and memoirs.	Common.
37. Size	Frequently large, but the vocabulary in a single index is generally smaller than that of an open-system index.	Generally larger than that of most closed-system indexes, making viewing the vocabulary in its entirety difficult.
38. User access to the indexing vocabulary	It is usually possible to see and browse the entire index – the indexed entries and the entire indexing vocabulary, including cross-references – simultaneously, especially in printed, as opposed to electronic, indexes.	Frequently difficult to see or browse the entire vocabulary. Indexing services omit terms if nothing dealing with them is published during an indexing period, and so no single issue contains the full syndetic structure. Vocabularies are often proprietary. In electronic systems, if user-accessible thesauri exist, they are usually separate from the indexed data.
39. Vocabulary development policy	Not usually required, as the index is unique to the document or relatively small.	Size and complexity of vocabulary require a policy covering processes for adding, modifying, or deleting terms.

D. Personnel

Attribute	Closed-system indexing	Open-system indexing
40. Number of indexers	There is usually only one indexer.	Usually many indexers, unless an automatic indexing/classification tool is used.
41. Time spent on indexing	The indexer generally spends a great deal of time on the project, reading and rereading the document, and designing, constructing, and editing the index.	Indexers may spend only a few moments per document, often merely scanning the text. The editor(s), who may perform no actual indexing of the documents, spend(s) considerable time on the structure and appearance of the index.
42. Amount of prior knowledge required	Because they usually work alone, indexers should have a thorough knowledge of indexing techniques (and, preferably, the subject at hand) before accepting a project.	As employees of indexing and abstracting services, indexers may receive considerable in-house training. Indexers who work as consultants should have a thorough knowledge of indexing. Automatic classification or indexing tools must be 'trained' to recognize terms and semantic concepts, or editors must write recognition rules.

system according to whether the vocabulary is meant to endure as an authority file for future indexing.

How can indexers tell whether to use open-system or closed-system techniques? The answer may not be immediately obvious. An individual indexing project may be, to a greater or lesser extent, a hybrid of the two systems. Whether indexing is open-system or closed-system is independent of the indexing agent – human or machine – or whether the product is designed for electronic searching. The duration of the project, while often a clue, is not a conclusive test. Indexers might be confused if an open-system job is short-term, such as an index to a single periodical that has ceased publication. Collections of letters can be handled as either open- or closed-system projects, even if all the correspondents are dead and no letters are likely to be added. We could index the letters more or less exhaustively. The form of the locators will depend on whether page numbers are possible, for example, if the letters are published in a book, or if the letters are loose, as they would be in an organization or business. In the latter case, the indexer must identify each letter by author, recipient, date and, perhaps, by physical location in a file. We could also add the page or even the paragraph numbers of each letter to the locators if we were indexing more exhaustively.

Space limitations prohibit a complete discussion, but many more differences between the two systems are laid out in Table 1. Indexers can study this table and use it as a test, choosing the system that seems to fit the task at hand most closely.

In the second half of this paper, we examine whether major textbooks and standards in the field differentiate clearly between the open-system and closed-system indexing processes.

## Publications dealing only with book indexing

Books and articles in the indexing literature often deal with only one type of indexing (without necessarily indicating that fact) or they confuse the two types. Since many authors are truly familiar with only one system, few textbooks cover the field as a whole. Those dealing only with book indexing make no pretense to cover the entire field. Their titles make their subject plain: *Book indexing* (Anderson, 1985); *Indexing books: a manual of basic principles* (Collison, 1962); *Indexing books* (Mulvany, 1994).

Larry Bonura's *The art of indexing* (1994), is an exception to the above statement. Bonura is described on page vii of his book as a past president of the Washington DC Chapter of the ASI. As such, he should know that there is more than one type of indexing. Nevertheless, although his book has a general title, it fails to specify that it deals only with book indexing. Furthermore, Bonura divides Chapter 3, 'Technical indexes', into two main sections: 'Book indexes' and 'Alphabetical indexes'. There is no indication of how these differ from each other.

## Publications dealing only with open-system indexing

Literature dealing strictly with open-system indexing frequently does not indicate its limited scope. One of the

most authoritative works on this subject is F. W. Lancaster's *Indexing and abstracting in theory and practice* (1991, 1998). While the title suggests that the author is dealing with indexing in general, such is not the case. It is not until page 59 (first edn) that Lancaster announces:

Although many of the principles discussed in this book are valid for indexes of all types, the major focus of attention is the indexing of databases of bibliographic items – post-coordinate indexing for databases in electronic form and pre-coordinate indexing for those in printed form. No attempt is made to present detailed instructions on the indexing of individual books. (Lancaster, 1998: 61)

A relative novice, as yet unaware that Lancaster does not deal with back-of-the-book indexing, must be surprised to read the first sentence of Chapter 3, 'Indexing practice': 'An indexer rarely has the luxury of being able to read a document carefully from cover to cover' (1991: 19). Surely indexers must read the entire document carefully – even more than once – to produce a professionally acceptable back-of-the-book index.

## Publications purporting to deal with both types of indexing

Jennifer Rowley's *Abstracting and indexing* (1988) is another book with a general title that deals primarily with open-system indexing. The following statements from the text are misleading for closed-system indexing:

Abstracts and indexes organize the literature so that a specialist can identify documents of interest more easily. (p. vii)

The objective of any index is to be able to retrieve the records or documents that have been stored and organized by the indexing process. (p. 48)

The indexer must become conversant with the subject content of the document, in just the same way as an abstractor must immerse himself in the text. The difference is only that an indexer is not usually called upon to appreciate the subtleties of the subject to the same extent as an abstractor. (p. 51)

There is nothing wrong with these sentences, except that the author does not specify that they pertain only to open-system indexing. Rowley does state that 'this work is not a comprehensive account of all abstracting and indexing practice; space dictates that it be selective' (p. vii). She enumerates some topics that she omits, such as evaluation and the needs of the users, but neglects to mention that her book does not specifically discuss back-of-the-book indexing.

In my review of *Indexing from A to Z* (Klement, 1993), I pointed out that even as great an expert as Hans Wellisch can slip up on the difference between open- and closed-system indexing although, elsewhere, he proves that he is well aware of the distinctions.

For example, on page 105 [page 155 in the second edition], he says that editing begins 'once the last page of a book or the last issue of a periodical has been indexed. . . .' Ignoring the fact that editing can take place at any time, a point Wellisch would concede, editing in open-system indexing occurs before each issue of an indexing service is published; the indexing of the last issue of a periodical is an event in the distant future, or even one that may never arrive. On page 259 [page 333 of the second edition], he says,

The index of a book or periodical is virtually always an integral part of its physical embodiment, and it is irrelevant whether or not the item is part of a collection of similar items (as, for example, in a library) or only a single item in the hands of a user. Not so for NPM [nonprint materials]: the index is always quite separate physically from the indexed item itself, and the recorded images, sounds, or data are almost always part of a *collection* [italics in the original]. . . .

Here, Wellisch notes a significant difference between closed-system and open-system indexing but fails to distinguish between the indexing of a single periodical and the indexing of many, disparate periodicals. This matter is never totally clarified and is particularly unclear in the chapter, *Indexing: the process and its techniques*, which skips around between closed-system and open-system processes without distinguishing between the two at all. (Klement, 1993)

One of the foremost British writers on indexing in the mid-20th century, Robert Collison, published two books on the subject. *Indexing books: a manual of basic principles* (1962), as its title suggests, is devoted specifically to book indexing, but the other, *Indexes and indexing* (1972), purports to be on indexing in general. In fact, however, the second book, which has the lengthy subtitle *Guide to the indexing of books, and collections of books, periodicals, music, gramophone records, films, and other material, with a reference section and suggestions for further reading*, devotes only one small chapter – five pages out of a total of 200 – specifically to open-system indexing theory. To be fair, other pages dealing with, for example, the indexing of correspondence, do give guidance on open-system indexing practice.

Collison states that ‘The indexing of periodicals is based on the same principles as those for the indexing of books’ (1972: 119). He describes and illustrates full bibliographic references, but does not mention that these serve as locators in, as he calls it, ‘continuative indexing’. Although he does not go into sufficient detail, Collison certainly understands the differences between the two systems. When we come to his ‘Twenty basic rules for indexers’ (1972: 174–5), however, we see that he refers only to back-of-the-book indexing. Rule one, for example, says: ‘Index everything useful in the book – text, illustrations, appendices, foreword, notes, bibliographies, etc.’ No rule deals with anything specific to open-system indexing. It seems almost an exception that rarely occurs, needing no special consideration.

Trudi Bellardo’s *Subject indexing: an introductory guide* (1991) deals with both types of indexing but contains some misleading comments. For example, she gives ‘page reference’ as an equivalent term for ‘locator’ (p. 11) despite the fact that, frequently, complete bibliographic references are necessary in open-system indexing. In a list of basic principles for the mechanics and arrangement of indexes, Bellardo includes double entries as an alternative to cross-references. She states that they ‘are appropriate when the index entries are short, with no subheadings’ (p. 24). However, double entries are usually not authorized in open-system indexing. Bellardo makes the statement that ‘careful reading, however, not only is often not practical, but probably not necessary’ (p. 31). This assertion is rarely, if ever, true for back-of-the-book indexing.

The textbook *Introduction to indexing and abstracting*, by Donald and Ana Cleveland (2001), covers the field as a whole and is, unlike several others cited here, readily avail-

able to students of indexing. It is, therefore, a shame that the authors seem not to understand the differences between the two systems, as all three editions of their book demonstrate. As my review of the third edition states, in part:

... on page 2 they say, ‘This process [indexing] involves the steps of analyzing the content of the information item, expressing the *aboutness* of the item in some abbreviated form and indicating the location of the information’ (italics in the original). Index terms in closed-system indexes do not always express the *aboutness* of the books being indexed; because one can find information about a subject in a book does not mean the book is about that subject. A similarly confusing statement occurs on page 3 where the authors say, ‘The index will help users find documents thus ensuring increased usage of the documents.’ Again, this assertion is true only for open-system indexing, but the authors do not differentiate.

Chapter 6, ‘The Indexing Process,’ mixes discussion of the two systems of indexing throughout. When the authors state, ‘The indexing process begins with deciding whether or not the document is worth indexing’ (p. 99), they are likely dealing with open-system indexing, but when they point out that title pages, dedications, tables of contents, etc., are not indexed (p. 100), or suggest that indexers jot down concepts using words taken directly from the text (p. 101), they appear to be including closed-system indexing as well. (Klement, 2002)

## Indexing standards purporting to deal with both types of indexing

The 1984 American National Standards Institute’s *Basic criteria for indexes*, in common with much of the literature, attempts to deal with open- and closed-system indexing at the same time. It defines a collection as ‘Any body of material that may be indexed. In this sense, a collection may consist of a single or composite document . . . a group of such documents, or a set of objects . . .’ (p. 7), and an index as ‘A systematic guide to items contained in or concepts derived from a collection’ (p. 7). Thus, by defining a single document as a collection, the standard avoids the problem we have been discussing. In a sense, perhaps, single documents are collections: they are collections of words, passages, ideas, facts. But calling single documents collections does not mean that the indexing of a single document is the same as the indexing of what we generally call a collection.

The statement ‘Subject entries indicate what an item in the collection is about’ (p. 12) appears to apply only to open-system indexing. The authors of the standard again cleverly extricate themselves from this box by defining ‘item’ extremely broadly as both a document ‘(i.e., a self-contained unit of information)’ (p. 7) and ‘any part of a collection, such as a passage in a book, an article in a journal, a document in a file, a segment of tape, one of a series of drawings, or the like; or any of the data contained therein’ (pp. 7–8). The authors realize that there are differences between the two indexing processes but these and several other passages indicate that the standard did not give users sufficient clarity on this issue.

The 1988 British Standard, since superseded by the 1996 International Standard, indicates in the foreword that it offers ‘advice for any indexing task’ (British Standards Institution, 1988: verso of title page). Despite that goal, the very definition of the term ‘index’ displays a bias for closed-system indexing: ‘A systematic arrangement of entries designed to enable users to locate information in a document’ (p. 2). It

would have been preferable to add 'or to locate a document containing specific information' to this definition. While the standard does not seriously mislead the experienced open-system indexer, the phrasing of many statements – and virtually all the examples – derive from book indexing.

After lengthy deliberations, the International Organization for Standardization produced the second edition of its indexing standard: *Information and documentation: guidelines for the content, organization and presentation of indexes* (1996). While the new edition, as a whole, distinguishes between open- and closed-system indexing, and while the authors obviously understand the differences between the two systems, most of the examples illustrate closed-system indexing. There are also a few curious lapses that betray a bias for closed-system indexing. For example, Section 7.1.1 states that 'Indexes should normally cover all matter in the documents', an overly ambitious recommendation for open-system indexing. The section mentions exclusions such as introductions, notes, addenda, illustrations and appendixes – items that apply primarily to closed-system indexing (although many open-system indexes make special note of illustrations in the citations that comprise the locators). The next sentence in the standard, however, mentions another probable exclusion, abstracts at the beginning of articles, that is certainly applicable to open-system indexing.

Section 7.2.2.2 states: 'If a term chosen as a heading appears in the document in both the singular and plural forms, one form only should be used in the index, except when the two forms have different meanings.' This principle is not relevant to open-system indexing. In section 7.5.2.1, the advice "See also" cross-references should be made between related headings or subheadings used in the index, but not when this results in the user being directed to identical locators' refers to a circumstance that usually cannot be known in advance in open-system indexing.

## Publications treating indexing as a whole without introducing confusion

What about the great master, Henry Wheatley? Well, we find him stating clearly:

There are indexes of Books, of Transactions, Periodicals, etc., and indexes of Catalogues. Each of these classes demands a different method. A book must be thoroughly indexed; but the index of Journals and Transactions may be confined to the titles of the papers and articles. It is, however, better to index the contents of the essays as well as their titles. (Wheatley, 1902: 121)

Unfortunately, the majority of Wheatley's illustrations come from book indexing.<sup>8</sup>

Another British author who describes some of the differences between the two systems lucidly is the highly regarded G. Norman Knight (1979). He states that, while the general principles of indexing apply equally to books and periodicals, 'the very nature of the latter necessitates some divergence both in procedure and technique (particularly in the form of the entries)' (p. 133). Knight mentions that periodical indexing takes place over longer periods of time than does book indexing and notes that 'this may result in some strain on the consistency of [the] subject headings' (p. 133). He continues:

The choice of keywords is vital. The main difference in this respect between the indexing of a periodical and that of a monograph is that the headings for the former have to be applicable to the use of different but similar words, or of similar but not identical meanings attached to the same words, by different authors in different contexts. (Knight, 1979: 138).

Knight also states that 'It is in the matter of the references [i.e. the locators] themselves that the chief difference can lie' (p. 134).

In the preface to the *NISO Guidelines for indexes and related information retrieval devices* (1997: vii), Committee Chair James D. Anderson states that the Committee's charge was 'to address in a single document all types of indexes used for information retrieval.' The Committee differentiated well between open- and closed-system indexing. Indeed, on pages 1 to 3 they include separate guides to print indexes to single documents, including back-of-the-book indexes, and to database and other continuing indexes. Furthermore, the glossary defines a *closed-end index* as: 'An index compiled at one time for one or more documents. Contrast with *open-end index*. See also monographic index' (p. 37, italics in original). Similarly, *open-end index* is defined as: 'An ongoing index compiled at set intervals or continuously updated. See also serial index; closed-end index' (p. 40, italics in original).

In their fine, but now dated, *Indexing concepts and methods*, Harold Borko and Charles Bernier make no misleading statements but fail to explain the differences between open- and closed-system indexing in a definitive manner. Jessica Milstead's exemplary *Subject access systems; alternatives in design* is also very clear on the issue but, since it was not intended as a textbook, is probably too theoretical for novices. The *NISO Guidelines* probably provide the best differentiation between the two systems to date.<sup>9</sup>

## Conclusion

While open- and closed-system indexing exhibit a great deal of similarity, they are sufficiently different to warrant at least partially separate treatment. Because both systems are often called simply *indexing*, and because so many of the major tools of our profession either ignore one or the other system or exhibit some degree of confusion, many novices may blunder about for some time during their first indexing projects. Each time I have presented a version of Table 1, audience members – both those new to the profession and those with long experience – have told me that the presentation has clarified the subject greatly for them. For some it was a revelation; for others, it was merely an exposition of what they had previously perceived only intuitively. Authors and teachers could – and should – prevent bewilderment and potential errors by differentiating explicitly between the two systems.

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## Notes

1. Lindheimer (1998) repeated this quip when presenting the American Society of Indexers' Hines Award to Weinberg.
2. Milstead (2002) points out that the two dichotomous pairs, open- and closed-system indexing and bibliographic unit and information unit indexing are 'highly correlated but not synonymous. An open index at the information unit level is perfectly conceivable – witness *Chemical abstracts* – even if not common.'
3. Zafran (2002) points out that, in some of the big thesaurus-driven indexes, indexers identify major and minor concepts (with a limit on each type).
4. As one of 'Jessica's aphorisms' puts it: 'Isolated instances shouldn't prevent use of an otherwise useful relationship' (Milstead, 2001).
5. Warner (2002) states that open-system indexing also frequently uses what is called *exhaustive indexing* in which indexers enter terms for both major and minor concepts. Indexing that is less exhaustive either indexes the whole document (*whole document indexing*) or only the major and minor topics in the document (*indexable unit indexing*). The term *concept indexing* can also be used rather than *indexable unit indexing*, with *concept* meaning the entire concept of the document or one of the concepts it can be divided into.
6. Fred Leise was particularly helpful to me with respect to website indexing.
7. Weinberg (2002, forthcoming) uses this term in her book on cross-references.
8. In commemoration of the centenary of the book's first publication, in 2002 the Society of Indexers published a facsimile edition of Wheatley's *How to make an index* (and also of his earlier *What is an index?*)
9. Neither A. C. Foskett's *The subject approach to information* (1982) nor Derek Langridge's *Subject analysis: principles and procedures* (1989) is exemplary in this respect but, owing to space limitations, I omitted discussion of these texts. Possibly Pat Booth's *Indexing: the manual of good practice* (2001) is an improvement, but I was unable to examine it prior to writing this article.

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