

Criteria for Indexes

Abstract: This standard provides guidelines for the content, organization, and presentation of indexes used for the retrieval of documents and parts of documents. It deals with the principles of indexing regardless of the type of material indexed, the indexing method used, the medium of the index, or the method of presentation for searching. It emphasizes three processes essential for all indexes: comprehensive design, vocabulary management, and syntax.

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Foreword

(This foreword is not part of *Criteria for Indexes*, ANSI/NISO Z39.4-2021. It is included for information only.)

About This Standard

In 2017, discussion began in the community regarding the apparent lack of a NISO standard addressing indexes and related information retrieval mechanisms. An outdated technical report from 1997, NISO TR02-1997, *Guidelines for Indexes and Related Information Retrieval Devices*, was based on ANSI/NISO Z39.4-1984, *Basic Criteria for Indexes*. In 1997, when ANSI/NISO Z39.4-1984 (whose first edition was published in 1959) was revised, NISO voting members did not reach consensus on approval of the draft revised standard, so it was published as a Technical Report, and Z39.4 was withdrawn. While NISO TR02-1997 is very robust and instructive, it lacked the authority and wider industry recognition of a formal standard and did not reflect the significant changes in technology and techniques since its publication.

This standard was developed by using NISO TR02-1997 as a starting point. It was extensively revised and extended as needed to address any issues of currency and completeness of coverage. All relevant advances in technology and techniques since 1997 were addressed, including embedded indexing.

Suggestions for improving this standard are welcome. They should be sent to the National Information Standards Organization, 3600 Clipper Mill Road, Suite 302, Baltimore, MD 21211 or via email to nisohq@niso.org.

NISO Information Creation & Curation Topic Committee

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Criteria for Indexes

1 Introduction

Deriving from the Latin *indicare*, to indicate, the purpose of an index is to point users in the right direction. An index makes it possible for users to find information efficiently: to find multiple topics or features, or aspects of topics or features.

This standard is intended for everyone concerned with indexes used for information retrieval: professional indexers working with every kind of document, database producers, publishers of indexes and of documents containing indexes, designers of electronic index displays, designers of indexing algorithms, librarians and catalogers, thesaurus creators, students, authors, and other users of indexes.

It is particularly designed for persons who have substantial knowledge and experience related to indexes. Others will want to use it to help set goals and determine criteria for indexes, while using the more detailed guides and textbooks listed in [Appendix A](#) for background and instruction.

2 Scope

2.1 General Statement

This standard provides guidelines for the content, organization, and presentation of indexes used for retrieval of documents and parts of documents. It deals with the principles of indexing, regardless of the type of material indexed, the indexing method used (intellectual analysis, machine algorithm, or both), the medium of the index, or the method for searching.

It emphasizes three processes essential for all indexes: comprehensive design, vocabulary management, and syntax. It does not suggest guidelines for every detail or technique of indexing. The construction and display of indexes for purposes other than the retrieval of documents is not covered by this standard.

2.2 Types of Documents

This standard deals with indexes for single documents and for collections of documents. “Document” is used in the broadest possible sense (see “document” in Glossary).

What kind of document requires an index? Generally, any document or collection of documents can be indexed with the possible exceptions of fiction and poetry. Indexes are essential for books and documents frequently referenced, including:

- textbooks
- encyclopedias
- government reports
- academic, scientific, or medical journals
- anthologies of literature, poetry, and music
- published museum collections or catalogs
- corporate and nonprofit annual reports
- legal documents

2.3 Choice of Terms

This standard covers criteria for terms in displayed index headings, as descriptors in nondisplayed indexes, and in vocabulary management. These guidelines permit use of natural language terms, and they call for the display of relationships among terms to indicate synonymous, equivalent, hierarchical, and associative relationships among concepts. (For the compilation of thesauri, see ANSI/NISO Z39.19-2005, *Guidelines for the Construction, Format, and Management of Monolingual Thesauri*.)

2.4 Method of Preparation

This standard is relevant to all indexes, regardless of whether they are produced by intellectual analysis or computer-assisted methods, whether they are searched visually or electronically, and whether they are compiled by one indexer or teams of indexers. This standard does not address indexing software or specific indexing algorithms.

2.5 Summary of Major Sections

This standard consists of fourteen sections, which are briefly summarized here:

Section 1, Introduction, describes index preparation and presentation.

Section 2, Scope, describes the intent of this standard.

Section 3, Normative References, lists the provisional documents for this standard.

Section 4, Definitions, lists terms and definitions necessary for understanding this standard.

Section 5, Function of an Index, describes the minimum functions an index should perform.

Section 6, Types of Indexes, describes the variety of indexes.

Section 7, Design of Indexes, describes the attributes of indexes.

Section 8, Vocabulary, recommends sources for and forms of terms for indexes.

Section 9, Headings and Locators, describes syntax and styles for index queries.

Section 10, Display of an Index, lists recommendations for the display of indexes and parts of indexes.

Section 11, Alphanumeric Arrangement, provides rules for sorting alphanumeric indexes.

The **Glossary** defines terminology for this standard.

Appendix A, Additional Resources, lists basic materials, additional reading, and thesauri.

The **Bibliography** lists the standards and other resources used to develop this standard.

The **Index** provides an alphabetical and systematic guide to content.

2.6 Summary of Key Considerations

Headings, subheadings, and locators should lead users to content. They should clearly convey meaning, and they should be usable and intuitive. Headings and subheadings should be clear and consistent. Indexes should include generous use of cross-references and multiple access points for content.

The key consideration for databases and other continuing indexes is continuity in indexing practices, policies, and terminology.

Users of indexed material represent a variety of academic, cultural, ethnic, socioeconomic, and religious backgrounds, as well as diverse genders, races, and sexual orientations. Therefore, designers and editors of indexes must be careful not to introduce bias through terms or definitions/scope notes that reflect only their personal perspectives.

3 Normative References

The following references contain provisions that, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid; however, all standards are subject to revision and users of this standard are encouraged to check for updates.

ANSI/NISO Z39.19-2005 (R2010), *Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies*.

ANSI/NISO Z39.29-2005 (R2010), *Bibliographic References*.

4 Definitions

The following terms, as used in this standard, have the meanings indicated.

algorithmic indexing	A method of indexing that uses text analysis and machine learning. There are two main principles: text extraction, which scans documents to extract relevant keywords; and text classification, which automatically assigns predefined tags to text based on its content.
closed index	An index for one or more documents to which additional entries will not be made. Contrast with <i>open index</i> .
cross-reference	A link between two or more terms or headings in an index.
displayed index	An index that may be searched by visual inspection.
document	The combination of the message and the medium in which it is encoded. The term applies to both written and printed materials (for example, books, journals, maps, diagrams), and to nonprint media (for example, machine-readable records, transparencies, audio recordings, video recordings, film), and, by extension, to natural or humanly made objects intended to convey information.
entry	A unit of information in a displayed index. In displayed indexes, an entry includes a main heading and a page

	number, paragraph number, or other locator that connects it to the content that the heading describes. An entry may include multiple levels of headings, subheadings, and sub-subheadings. Entries may go down several levels.
heading	One or more terms representing a topic or feature of a document in a displayed index.
index	A systematic guide to facilitate retrieval of content.
indexing	The process of creating an index for information retrieval.
locator	The part of an index entry that indicates where information is found.
nondisplayed index	An index that is searched by electronic comparison and matching with computer algorithms. The complete index itself is not displayed for visual search.
open index	An ongoing index compiled at set intervals or continuously updated.
record	The description or representation of a documentary unit in an index.

5 Function of an Index

An index helps users locate documentary units (complete documents or parts of documents) that are relevant to information needs or requests. An index should therefore:

- a. Increase the findability of content and the discoverability of related items that users do not yet know about.
- b. Identify documentary units that discuss particular topics or possess particular features.
- c. Indicate all important topics or features of documentary units with the level of exhaustivity, specificity, and consistency appropriate for the index.
- d. Distinguish between significant and insignificant mentions (major and minor treatments) of particular topics or manifestations of particular features.
- e. Provide access to topics or features using the terminology of prospective users and the terminology of texts or objects being indexed. Include synonymous terms whenever possible.
- f. Use terminology that is as specific as the documentary units warrant and the indexing language permits.
- g. Guide users to related concepts (narrower terms, broader terms, or other related terms).
- h. Allow combinations of terms to facilitate the identification of particular types or aspects of topics or features and to eliminate unwanted types or aspects.

- i. Allow searching for particular topics or features with a systematic arrangement of entries in displayed indexes or, for nondisplayed indexes, with a clearly documented method for entering, combining, and modifying terms to create search statements and review retrieved items.

6 Types of Indexes

Common types of indexes include the following:

6.1 Indexes by Periodicity

- a. One-time, closed indexes
- b. Continuing, open indexes

6.2 Indexes by Method of Document Analysis

- a. Human intellectual analysis to identify topics and concepts
- b. Computer algorithms to identify useful terms, phrases, or features
- c. Combination of algorithmic and human analysis

6.3 Indexes by Type or Extent of Indexable Matter

- a. Full text of documents
- b. Abstracts
- c. Titles only
- d. First lines only (for example, first lines of poems)

6.4 Indexes by Arrangement of Entries

Indexes designed for human scanning, browsing, and examination must have some arrangement, regardless of medium. Electronic indexes often have no arrangement that is apparent to the user.

Arrangement options include the following:

- a. Alphabetical or alphanumeric
- b. Classified: heading arrangement based on relationship among concepts; classified indexes are often based on existing classification schemes that are enumerative and/or faceted, e.g., Dewey Decimal Classification, Library of Congress Classification, or Colon Classification
- c. Alphabetic-classed: broad headings arranged alphabetically; narrower headings are grouped under broad headings and arranged alphanumerically or relationally based on hierarchy, inclusion, chronology, or other association

6.5 Indexes by Type of Entries

- d. Titles: the names of documents
- e. Contributors: all types of document creators, e.g., authors/writers, composers, illustrators, translators, editors, choreographers, artists, sculptors, painters, inventors, and organizations
- f. Subjects (topics or features): topics treated in documents or features of documentary units (for example, genre, format, methodological approach); separate indexes are often devoted to

special types of topics (for example, persons, places, or corporate bodies), or features such as genres (for example, poetry, drama)

- g. Identifiers: numbers that can be used to locate documents, e.g., patent number, International Standard Book Number (ISBN), Digital Object Identifier (DOI), Virtual International Authority File (VIAF), etc.
- h. Physical descriptions: terms that describe the type of content, e.g., maps, photos, illustrations, etc.
- i. Other types of single entry–type indexes: may be based on a single type of entry, including place name, company name, law, case name, medication, industrial classification codes (e.g., the North American Industry Classification System), scripture and ancient sources, or other information

7 Design of Indexes

Decisions concerning indexable matter and other key options and attributes will influence the quality of the index. Decisions should be based on the needs, habits, and preferences of users.

Index design should be included in user documentation. See also [10.1](#), Explanatory Notes for Indexes.

7.1 Scope of an Index

The scope of an index should be the same as the scope of the document or collection. An index should include a level of detail or granularity that is appropriate and helpful for the target audiences.

7.1.1 Indexable Matter

Indexable matter consists of the portions of documents that are analyzed. Decisions on indexable matter should be based on usefulness and should be stated explicitly.

7.1.2 Content Coverage

The scope should describe the areas covered and the kinds of topics or features indexed, such as concrete entities (persons, organizations, artifacts, natural objects), abstract entities (belief systems, concepts, disciplines, theories, hypotheses, mythological or fictional characters), geographical entities, events, or historic time periods.

7.1.3 Documentary Coverage

An index should clearly state the kinds of documents included or their attributes, such as:

- Medium and format
- Title coverage (when scope is limited to a stated list of documents or titles)
- Periodicity (frequency of publication)
- Audience or reading level
- Language or nationality
- Frequency of updates (especially in the case of open indexes)
- Selectivity, if documents have been limited by qualitative selection criteria

An index may refer to different sizes and types of documentary units. For indexes to textual documents, the documentary units can range from lines and statements to monographs, serials, and entire collections. Analogous units (e.g., map coordinates, motion picture frames, quadrants of images, or time stamps) may be used for nontextual documents.

See also [7.5](#), Depth of Indexing.

7.1.4 Locational Coverage

An index may point to documents located in particular places or in particular collections, such as a national or special library, or to multiple collections of documents.

7.1.5 Primary Versus Secondary Sources

Index terms should reflect the content being indexed while also accommodating the expectations of index users. Main headings or preferred terms should reflect terminology found in the source content. Cross-references from related and alternative terms not found in the document but likely used by searchers should also be added to the index.

For indexes with multiple and varied content sources, a standard controlled vocabulary should be used to bring content on a similar topic together under a single heading.

7.2 Multiple Versus Single Indexes

In some disciplines, separate indexes are customary and desirable to facilitate targeted searches, for example, separate subject, author, and company indexes. It may also be desirable when it is awkward to merge verbal and nonverbal terms, such as chemical formulas, patent numbers, or terms in different writing systems.

When separate indexes are used, the search system should support searching across all indexes.

7.3 Display Media

Indexes may be displayed in a range of media. The medium will influence other options for accessing the index.

See also [10](#), Display of an Index.

7.4 Indexing Method

Documents may be indexed through human intellectual analysis, algorithmic analysis, or a combination of both. The indexing method may not be apparent to users.

7.5 Depth of Indexing

The depth of indexing is determined by exhaustivity and specificity requirements.

7.5.1 Exhaustivity

Exhaustivity of indexing is the detail to which topics are analyzed. Exhaustivity may be described as the number of unique terms, on average, to be extracted from a documentary unit. The level of exhaustivity should be determined at the outset of the index's creation.

7.5.2 Specificity

Specificity refers to the precision of index terms in relation to the topics or features they represent. For example, "pickup trucks" (a specific term) may be used to represent that type of truck, or "trucks" (a generic term) may be used for all types of truck.

8 Vocabulary

Successful indexes require successful vocabularies. Within the context of the index, a well-constructed vocabulary:

- Reflects the purpose of the index
- Corresponds to the topic, granularity, and language of the documentary unit
- Gathers similar content under a single heading
- Provides cross-references that direct users to that heading and to related headings

Well-constructed vocabularies built independently of a specific index will generally contain comprehensive coverage of a domain. An index will use only those concepts that apply specifically to the content that it covers.

Indexers should take care not to introduce their own bias into vocabulary terminology.

ANSI/NISO Z39.19-2005 (R2010), *Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies* gives excellent guidance for the construction of topical thesauri. The Resource Description and Access (RDA) cataloging standard published jointly by the American Library Association, the Canadian Federation of Library Associations, and CILIP: the Chartered Institute of Library and Information Professionals is an additional resource for the construction of named entity authority files.

8.1 Sources of Vocabulary

Vocabulary terms and relationships may come from the documentary unit or a controlled vocabulary. Preexisting vocabularies may need to be modified to reflect the terminology of the content. When different terms are used to refer to a single concept, cross-references or double postings should be used to provide access to all the content about that concept.

Stop-word lists are frequently used to improve retrieval. Indexers should be aware of stop-word lists so they can appropriately avoid stop-words in index headings. Stop-word lists should be kept up to date. See also [8.7.1](#), Updating Index Terms in Open Indexes. For more on machine-aided identification of stop-words, see ANSI/NISO Z39.19, Section 11.1.6.4.

Controlled vocabularies are especially important for large indexes. Well-formed vocabularies can prevent indexing scatter, in which a single topic is scattered across different terms.

Commonly used controlled vocabularies include:

- *Library of Congress Subject Headings*
- Wikidata
- Authority files linked through the Virtual International Authority File
- *Getty Art & Architecture Thesaurus*
- *Medical Subject Headings*

See also [Appendix A](#).

8.2 Forms of Terms

There are conventions and customs for English-language indexes and for other natural languages used for indexing. These conventions should be observed when establishing preferred terms unless there are overriding conventions in the discipline, field, or application. In this standard, only US English language

conventions and customs are cited. When creating an index, the grammatical forms of terms must be considered at the outset and used consistently in the index.

8.2.1 Parts of Speech

ANSI/NISO Z39.19, Section 6.4 addresses the preferred grammatical forms of terms. That standard provides guidelines for nouns and noun phrases, adjectives, adverbs, and initial articles.

8.2.1.1 Nouns, Prepositional Phrases, and Adverbs

Nouns, including verbal nouns (gerunds) and noun phrases, are the preferred parts of speech for index terms. Adjectives are often used to modify nouns; they should generally not be used alone in a main heading or entry. Prepositional phrases are often used as subheadings to modify main headings or within headings to modify lead terms. Prepositions are also used as role indicators to link terms. Adverbs should not be used unless they form an integral part of a term, for example, “very high frequency.”

English-language indexes customarily use the plural form for terms denoting discrete objects (count nouns) and the singular form for mass terms and most abstract concepts. The plural is used when the question on quantity asks, “How many?” The singular is used when the question on quantity asks, “How much?”

If the singular and plural forms of a noun have different meanings, both forms should be used separately when both are needed to represent topics or features of a text. The distinction between them should be clarified with qualifiers:

memories (reminiscences)
memory (brain function)

8.2.1.2 Articles

Articles are generally avoided in index terms. Initial articles should not be omitted from names of persons, places, or corporate bodies, or from titles. Do not transpose articles. See also stop-words in [8.1](#).

8.2.2 Spelling

Per ANSI/NISO Z39.19, Section 6.6.2, indexes should use the most widely accepted spellings. However, indexes should also reflect the documentary units they index. If the documentary units use different spellings, then those spellings should also be reflected in the vocabulary of the index. Whichever spelling is chosen, it should be used consistently.

Alternative spellings should be linked to the preferred spelling of the term. This is especially important in non-displayed electronic indexes, where even minor variations in spelling (for example, aluminum/aluminium) may lead to loss of access.

Abbreviations and acronyms as terms are used only when the indexed document(s) commonly use them, and the full form of the term or proper name is rarely used. Create cross-references from the full form of the term when it is the most commonly used form.

8.2.3 Capitalization

Per ANSI/NISO Z39.19, Section 6.7, predominantly lowercase characters should be used for terms in controlled vocabularies. In proper nouns, the first letter of the first word and the first letter of each succeeding word, other than conjunctions, prepositions, and articles, should be capitalized. Acronyms of names of organizations should follow usage of the organization (e.g., NATO, Unicef). Other acronyms should follow conventional capitalization (e.g., radar, COBOL).

According to the RDA guidelines for the capitalization of titles, the first letter or the abbreviation of the first word is recorded with a capital letter and it is permitted to “take what you see” on the resource. *The Chicago Manual of Style* also describes English-language capitalization. For example:

Christian education
 Eli Lilly and Co.
 furniture
 Japanese cars
 Marlborough, John Churchill, first Duke
 radar
 scuba
 smartphones
The Tempest
 United States Department of Education
The Wind in the Willows

8.2.4 Compound or Multiword Terms

In accordance with ANSI/NISO Z39.19, Section 7, a single term (as opposed to a precoordinated or multilevel heading) should represent a single concept. What constitutes a single concept will vary. Frequently two or more terms become “bound” together to express a concept, like “information science,” “birth control,” or “form of government.”

When such compound terms are used, they should be preferred to the alternative of forcing the combination of two separate terms, for example, “science” and “information,” or “control” and “birth” or “conception” at the time of searching or when combining terms for headings and entries. Use of compound terms also helps to avoid “false drops,” such as the retrieval of documents on “library schools” when “school libraries” is intended. Similarly, terms like “information” and “science” can occur in many contexts where “information science” is not discussed.

When antonyms and other closely associated terms (for example, honors and awards) are combined to form compound terms, the terms not chosen as lead terms should be linked to the compound term by cross-references. For example:

awards. See honors and awards
 evil. See good and evil

8.2.4.1 Natural Word Order and Inversion

In general, natural word order should be preferred for headings. However, multiword terms in indexes that are browsed alphabetically may require inversion of words to provide a useful entry point for the user. For example:

deciduous trees [not: trees, deciduous]

Access should also be provided by means of substantive terms that are not in the lead position. For example:

trees, deciduous. See deciduous trees
 or:
 trees. See *also* deciduous trees

An acceptable alternative to inverted terms is a heading-subheading combination. For example:

trees
 deciduous
 evergreen

8.2.5 Proper Nouns

Proper names of persons, corporate bodies, places, and work titles should be established, to the extent possible, in accordance with standards used in library practice. RDA provides guidance for names.

8.2.5.1 Personal Names

Personal names should be provided in the most commonly known and used form, and in as full a form as possible when there is more than one common form. Limiting forenames to initials invites confusion, unless initials are part of the commonly used form of a name (for example, D. H. Lawrence). When more than one name or form of name is in use, they should be linked as synonymous terms. Where surnames are in common use, names should be entered under surname, followed by a comma and any given names or initials. If a name consists only of a surname, the name should be entered under the surname alone:

Lee, Kuan Yew
 Wheatley, Henry B.
 Mantovani

Persons identified only by a given name or forename should be entered under that name, followed, if necessary, by a title of office or another distinguishing epithet:

Boudicca, Queen of the Iceni
 Leonardo da Vinci
 Ethelred the Unready

Persons normally identified by a title of honor or nobility should be entered under that title, expanded, if necessary, by their family name:

Dalai Lama
 Marlborough, John Churchill, first Duke

Compound and multiple surnames, whether hyphenated or not, should be entered under the first part, unless established usage or the person favors another practice. For example, Portuguese names are customarily entered under the last part. Cross-references should be established among all possible forms of entry:

Layzell Ward, Patricia [with cross-reference from: Ward, Patricia Layzell]
 Perez de Cuellar, Javier [with cross-reference from: De Cuellar, Javier Perez; and from: Cuellar, Javier Perez de]
 Trevor-Roper, Hugh [with cross-reference from: Roper, Hugh Trevor]

When two or more persons have the same name, their names constitute homographs and should be distinguished with qualifiers consisting of a fuller form of name or dates of birth or/and death where available; otherwise, occupation, title of the person, or nationality should be used:

Butler, Samuel (1612–1680)
 Butler, Samuel (1835–1902)
 Lawrence, D. H. (David Henry)
 Lawrence, D. H. (Derek Herbert)

Rickert, Heinrich (philosopher)
Rickert, Heinrich (politician)

In indexes to biographies, qualifiers may also be used to indicate the relationship between a person and the main subject of the biography, for example, “(son)”, “(brother)”, or “(mother)”.

NOTE: RDA calls for two different formats for qualifiers, depending on the type of qualifier and the form of name. In contrast, these guidelines call for the use of parentheses for all qualifiers, for the sake of consistency within indexes and to conform to recommendations of the NISO thesaurus standard, ANSI/NISO Z39.19.

8.2.5.2 Organization and Corporate Names

Organization and corporate names should be entered without transposition in the form most commonly identified and used by the body itself. If more than one form is commonly used, the most complete form should be used as the preferred term. If an abbreviation or acronym is the most commonly used form, that form should be used instead of the full form. Initial articles that are part of the commonly used form should not be omitted or transposed:

Der Blaue Adler (association) [not: Blaue Adler, Der (association)]
The Club (London) [not: Club (London) or Club, The (London)]
Eli Lilly and Co. [not: Lilly, Eli, and Co.]
UNESCO [not: United Nations Educational, Scientific, and Cultural Organization]

Sorting will be on the word immediately following the article. See also [11.4](#) regarding the arrangement of headings with initial articles.

Depending on the display and search technology used for an open index, the standard used for initial articles may need to reflect the usage of stop-words or other adjustments. An index should always be as consistent as possible in these cases, and the standard used within the index should reflect the best user experience for that index.

NOTE: These guidelines follow the general RDA principle of representation: “choose the name by which a corporate body is commonly identified.” When the name by which a body is commonly identified includes an initial article, it should be included (e.g., The Club).

Unless abbreviations constitute or are part of the commonly used form, names of corporate bodies should not be abbreviated:

United States. Department of Education [not: DOE]
United States. Department of Energy [not: DOE]
University of Nebraska [not: Univ. of Nebraska]
New York University [not: NYU]

NOTE: In some situations, “US” may be considered a commonly used form for “United States.”

Corporate bodies that are parts of larger bodies should be entered under their own names unless the name is indistinct or implies subordination. If the name needs the name of a higher body, the lowest level body that can be entered directly under its own name should be used:

Public Library Association. Audiovisual Committee [not: American Library Association. Public Library Association. Audiovisual Committee]
United States. Department of Health and Human Services [not: Department of Health and Human Services]

When there are several hierarchical levels, only enough needed for identification should be included in the name to avoid confusion. It is not necessary to include the entire organization structure unless omitting it causes confusion:

Michigan. Department of State. Elections Division.

Identical names for different bodies constitute homographs and should be distinguished with qualifiers. These qualifiers can include associated places, associated institutions, start or/and end dates, and other designations such as type of corporate body or jurisdiction:

Cork (Ireland)
 Cork (Ireland : County)
 Facebook (company)
 Facebook (website)
 Metropolitan Museum of Art (Cleveland, OH)
 Metropolitan Museum of Art (New York, NY)
 South Dakota. Department of Public Safety (1973-1984)
 South Dakota. Department of Public Safety (2003-)
 U.S. Open (Golf tournament)
 U.S. Open (Tennis tournament)

Cross-references should link different names for the same body and all possible forms of entry, including inverted forms and forms incorporating names of larger bodies:

American Library Association. Public Library Association. *See* Public Library Association
 Department of Health and Human Services. *See* United States. Department of Health and Human Services
 DOE. *See* United States. Department of Education; United States. Department of Energy
 Medicine, National Library of. *See* National Library of Medicine
 The Club (London). *See* The Club (London) — arranged under “Club” [enter reference under “The”]
 The Real-time Operating System Nucleus Project. *See* TRON Project [enter reference under both “The . . .” and “Realtime . . .”]
 U. S. *See* United States.
 United States. DOE. *See* United States. Department of Education; United States. Department of Energy
 United Nations Educational, Scientific, and Cultural Organization. *See* UNESCO
 Whitaker, J., & Sons. *See* J. Whitaker & Sons

NOTE: The form and presentation of the cross-references will differ in displayed and nondisplayed indexes. *See also* [8.8](#), Display of Vocabulary in Indexes.

Many companies and organizations have an eponymous website. Depending on the scope of discussion and the number of citations, it may be preferable to use a single heading:

Facebook

Or, to split discussion of the organization and discussion of the website into two separate subheadings under a single heading:

Facebook
 Facebook Inc. (Company)
 Facebook (website)

Or, to use two separate terms:

Facebook Inc.
 Facebook (website)

8.2.5.3 Geographical Names

Geographical names should be as full as necessary for clarity, with qualifiers to avoid confusion between otherwise identical names:

Middletown (CT)
Middletown (OH)
Middletown (Powys, Wales)
Washington (State)

Abbreviations should not be used unless there is a commonly accepted standard, such as US Postal Service abbreviations.

The English form is preferred if there is one in general use. Otherwise, the form in the official language of the country should be used. For example:

Buenos Aires
Florence [not: Firenze]

The official form of a geographic name is preferred over the popular name. Cross-references should be provided to link variant forms:

Netherlands [rather than: Holland]

If an article or preposition is an integral part of a geographical name it should be retained:

Des Moines
Las Vegas
Los Angeles
The Dalles
The Hague

See also [11.4](#) regarding the arrangement of headings with initial articles.

NOTE: The Name Authority Cooperative Program (NACO), part of the Program for Cooperative Cataloging, calls for the use of older forms of the abbreviation for the states of the United States, forms that are no longer in widespread use with the advent of official US Postal Service abbreviations.

8.2.5.4 Titles of Works

To the extent possible within typographical constraints, titles of works should not be changed or altered. For example, the name of a chemical should not be substituted for a chemical symbol or a numeral replaced with its name.

When it is necessary to correct an error in a title, the correction should be placed in square brackets, prefaced by "i.e.":

The Paul Anthony Buck lectures [i.e., The Paul Anthony Brick lectures]

Titles should not be abbreviated unless very long, and any omissions should be indicated by three dots (an ellipsis):

Inquiry into the nurturing and elimination of life forms within marginally controlled ecosystems . . .

Titles with numerals or other nonalphabetic symbols (e.g., chemical, mathematical, musical, and scientific symbols) should be linked with equivalent cross-references from names of numerals or names of symbols, if any:

1984. See Nineteen eighty-four
Dollars & sense. See \$\$\$ & sense
Ten sixty-six and all that. See 1066 and all that
Two thousand and one. See 2001

If necessary, qualify the title of a work with a term that will indicate the type, format, genre, or medium of the work:

Charlemagne (play)
Genesis (Anglo-Saxon poem)

For identification, names of creators, places of publication, dates, or other qualifiers may be used:

Ave Maria (Gounod)
Ave Maria (Schubert)
Ave Maria (Verdi)
Natura (Amsterdam)
Natura (Milan)

An initial article should not be omitted or transposed to the end of the title:

Das Kapital (Marx) [not: *Kapital* (Marx); *Kapital, Das* (Marx)]
The Tempest [not: *Tempest*; *Tempest, The*]

See also [11.4](#) regarding the arrangement of headings with initial articles.

NOTE: These guidelines follow the general RDA principle of representation, to use “the title or form of title in the original language by which a work is commonly identified.”

Prepositions at the beginning of a title should be retained:

An die Musik
To the lighthouse

8.2.5.5 First Lines

In first-line indexes, initial articles should be retained in natural order, not transposed. See also [11.4](#) regarding the arrangement of headings with initial articles.

8.2.6 Romanization

Names and words rendered into the Latin alphabet from another writing system should be based on standard romanization tables unless a well-established English language form exists. Use the *ALA-LC Romanization Tables*. For example:

Dayan, Mosheh
 Solzhenitsyn, Aleksandr
but:
 Alexander the Great [not: Alexandros ho Megas]
 Avicenna [not: Abu Ali ibn Sina]
 Confucius [not: Kung Fu Tzu]

Cross-references should link alternative forms of romanized names and other terms.

8.3 Disambiguation of Terms

An index may include nouns whose meanings need to be differentiated from one another. One example is when the singular and plural forms of a noun are both in an index because they have different meanings. The distinction between them should be clarified with a qualifier:

memories (reminiscences)
memory (brain function)

Another example is homographs, identical terms that represent different concepts or features. These should be differentiated with a qualifier. See ANSI/NISO Z39.19, Section 6.2.1, for more on the use of qualifiers:

races (anthropology)
races (sport)
pipes (musical instruments)
pipes (smoking implements)

8.4 Synonymous and Equivalent Terms

ANSI/NISO Z39.19, Section 8.2, provides guidelines for the relationship between the preferred term and its equivalent or nearly equivalent concepts. A cross-reference to the preferred term should be made from any of its synonyms or quasi-synonyms. For example, “nonunion labor. *See* strikebreakers,” and “scab labor. *See* strikebreakers.”

Terms that have variants requiring cross-references include those with numerals and the equivalent having the number spelled out (for example, nineteenth century/19th century) and terms with variations in spelling or endings (for example, aluminum/aluminium). Any such terms with noncontiguous arrangement positions should be linked in displayed indexes.

What constitutes equivalency between terms depends on the level of specificity used in an index. Equivalency is sometimes established between a narrower term that is too specific and a broader term. For example, “chairs” may be a lead-in (nonpreferred) term for “furniture.” This relationship is sometimes indicated with a simple “*see*” or “*use*” reference and sometimes with a “*see under*” reference (when a distinction is made between synonymous terms versus narrow-to-broad “equivalent” terms):

cars. *See* automobiles
convertibles (automobiles). *See under* automobiles

“*See under*” is also used for a reference from a term to an instance of that term as a subheading under another term:

editing. *See under* books; journals

However, such references would be clearer if the target heading and subheading are included in full (see also [8.8.1.3, Location of Cross-References](#)):

editing. *See* (or *See also*) books — editing; journals — editing

When indexes use one term as the preferred term, and link alternative, synonymous, and equivalent terms to it, the unused terms may be usefully displayed as “used for” or “equivalent terms” in a note or display under, or linked to, the preferred term. These “used for” terms help to define the scope of the preferred term (descriptor):

automobiles
used for cars, motor vehicles, particular models and types of
 automobile, such as convertibles, jalopies, sedans, and for
 particular brands or makes, such as Buicks, Fords,
 Plymouths, etc.

NOTE: The form and presentation of the cross-references will differ in displayed and nondisplayed indexes. See also [8.8](#), Display of Vocabulary in Indexes.

8.5 Hierarchical Relationships Among Terms

ANSI/NISO Z39.19, Section 8.3, states that “the use of hierarchical relationships is the primary feature that distinguishes a taxonomy or thesaurus” from simpler forms of controlled vocabulary or term lists. Links between broader and narrower terms are based on degrees or levels of superordination and subordination, where the superordinate term represents a class or a whole, and subordinate terms refer to its members or parts. By expressing this broader-narrower reciprocity, an index guides users from a larger set of terms (for example, “dogs”) to the subordinate terms representing parts of that set (species of dogs). In a controlled vocabulary, these types of relationships are indicated by the abbreviations BT (broader term) and NT (narrower term).

Links from broader to narrower (or narrower to broader) terms may not be appropriate in every index, particularly when space is limited.

See ANSI/NISO Z39.19, Section 8.3, for specific examples of hierarchical relationships.

8.6 Other Relationships

ANSI/NISO Z39.19, Section 8.4, addresses terms that are neither equivalent nor hierarchical, but are semantically or conceptually related. These symmetrical relationships provide additional options for improving searches. In a controlled vocabulary, these types of relationships are indicated by the abbreviation RT, Related Term.

Specific examples of hierarchical relationships are found in ANSI/NISO Z39.19, Section 8.4.

8.7 Changes in Terminology

In continuing, or open, indexes, it is important to link older and newer terms that are synonymous, equivalent, or closely related (see also [8.4](#), Synonymous and Equivalent Terms). The date of the change should be indicated. Changes in online indexes may be made available to users as metadata such as history notes, instead of being visible in the term itself.

Examples of changing terminology include:

- a. The introduction of a new term as a substitute for an older term:
 - Alcohol abuse [changed in 1986 to] Alcoholism
 - Negroes [changed in 1968 to] Blacks [changed in 1992 to] African Americans

- b. Name changes:
 - Swaziland [changed in 2018 to] Eswatini
 - Jenner, Bruce [changed in 2015 to] Jenner, Caitlyn
 - Rutgers University. Graduate School of Library Service [changed in 1982 to] Rutgers University. School of Communication, Information, and Library Studies
- c. The use of additional terms to express narrower topics previously embraced by a broader term:
 - computers beginning 1990. *See also* microcomputers, minicomputers

8.7.1 Updating Index Terms in Open Indexes

Because open indexes develop over time, vocabulary may require updates. Changes may include direct changes in terminology, splits of a single term into one or more terms, and mergers of multiple concepts into a single term.

Creators of an open index need to ensure that the entire corpus in a database is indexed consistently, in terms of both a controlled vocabulary and policies that outline how to apply those terms to older and newer records that have been compiled over time. When indexing policies or individual terms change, the content backfile should be updated to reflect that change.

The best practice is to update term assignments to reflect the current version of the thesaurus or controlled vocabulary, which should also be the version of the vocabulary searched by index users. Records will not be included in search results if they are tagged with an older version of a term, or not tagged with a newly introduced term that applies to that item. Failure to maintain and update indexing terms results in indexing scatter and diminished accuracy of retrieval. Similarly, stop-word lists, which aid in improved retrieval, should also be kept up to date.

8.7.1.1 Scope Notes and History Notes

Per ANSI/NISO Z39.19, Section 6.2.2, scope notes define the terms, distinguish between terms with overlapping meanings, and provide advice on term usage to either the indexer or the searcher. A scope note is not part of a term, unlike a parenthetical qualifier. It should be set off from the term itself by means of typography or layout.

History notes, similarly, are informational notes that should be set off from the term itself. Per ANSI/NISO Z39.19, Section 6.2.3, history notes track the development of terms over time. History notes are important to researchers who are interested in a topic covering many decades in a continuing index. For example:

“Radio” replaced “wireless” in 1950

History notes may also be presented in the form of a cross-reference:

radio in pre-1950 volumes. *See* wireless
wireless. *See* radio

When both old and new entries are present in the same index, “see also” references should be used:

radio. *See also* wireless for entries before 1950
wireless. *See also* radio for entries from 1950 onward

When cross-references refer to newer terms that were formerly subsumed under a broader term, dates should be attached so that users know when such terms were introduced:

computers. *See also* microcomputers from 1977 onward; minicomputers from 1972 onward
microcomputers. *See also* computers for entries before 1977
minicomputers. *See also* computers for entries before 1972

8.7.2 Storage and Maintenance of Indexing Terms in Open Indexes

Most large electronic indexes use an application or database for storing and maintaining the vocabulary that is separate from the content backfile itself. In this implementation, the index contains the metadata for each document as well as a unique identifier for the document. The metadata and documents are then merged at the point of retrieval. In these cases, it is important to have a consistent link between the vocabulary maintenance system and the content. This can reduce some of the system and storage resources needed to update very large content backfiles.

Storing indexing terms as unique identifiers is a best practice that makes updating a vocabulary more efficient and reduces the risk of scatter. Storing indexing terms as text strings is also acceptable, if the systems supporting such storage track the terms properly.

If the index is searched in a separate application, the data in that application should also be updated on an ongoing basis. This reduces the risk of indexing scatter.

In cases where a versioned copy of an open index must be maintained, and updated terms are added to records in a backfile, the terms should contain metadata that reference the version of the vocabulary to which they belong.

Open indexes should avoid updating methods that leave defunct, archaic, or unwanted indexing terms on records that can be accessed by users. Those archaic terms may be included in a vocabulary to be displayed and used as search cross-references if that would be helpful to users, but need not be included or displayed if the usage is deemed offensive or unhelpful.

8.8 Display of Vocabulary in Indexes

The following sections make recommendations on the display of vocabulary and relationships among headings.

8.8.1 Vocabulary Information in Displayed Indexes

In print media, index entries should be displayed in ordered arrays that provide access to the headings and entries. Such displays are also common in electronic indexes designed for nonexpert users, such as online public access catalogs (OPACs) in libraries. See also [10](#), Display of an Index.

In electronic indexes, displayed cross-references should directly link to preferred terms and/or to any desired related terms (narrower terms, broader terms, or other associated terms). Cross-references may be displayed at any heading level as necessary. Scope or history notes may also be displayed.

8.8.1.1 Cross-References Versus Double Entries

In closed indexes, a duplicate entry under an alternative heading should be made if it has no subheading. This practice is known as double posting. Double postings may include triple or quadruple postings. For example:

automobiles 23, 45
cars 23, 45
motor vehicles 23, 45

not:
automobiles. See motor vehicles
cars. See motor vehicles
motor vehicles 23, 45

8.8.1.2 Cross-References to Multiple Terms or Headings

When cross-references refer to multiple terms or headings, these should be listed in alphabetical order, separated by semicolons.

However, if the nature of the relationships is indicated, these should be listed by category (e.g., synonymous, equivalent, broader, narrower, related), and within the category in alphabetical order, separated by semicolons. For example:

sexuality

used for equivalent term sexual nature

see also narrower terms bisexuality; chastity; heterosexuality; homosexuality; incest;
necrophilia; sublimation

see also related terms gender; sex; sexual identity; sexual problems

see also broader terms behavior; human nature

World War II

see also Battle of the Bulge; Eisenhower, Dwight D.; Project Manhattan

8.8.1.3 Location of Cross-References

“See also” cross-references should follow any locators related to a single term or heading from which they refer:

bears 100, 217, 923. *See also* polar bears

“See also” cross-references should also precede subheadings when their headings have numerous subheadings. They can, for example, be displayed on lines indented more deeply than subheadings:

economics 144, 195, 229, 363

see also assets; banking; business; commerce; firms; transport; wealth

bibliographies 208

mathematical models 160

statistics 155

Cross-references should be attached to the heading or the subheading from which they refer:

economics

statistics 155

see also econometrics

housing

apartments. *see* apartments

duplexes, 5, 10

regulations governing, 10-15, 19, 21

single-family homes, 25, 27, 29

zoning. *see* zoning

When a cross-reference leads from a subheading under one main heading to the same subheading under another main heading, the reference should include both the main heading and the subheading referred to:

economics

statistics 155

see also economic policy — statistics

8.8.1.4 Cross-References in Electronic Displayed Indexes

A displayed vocabulary in an electronic index allows users to see the hierarchy of related and equivalent terms (broader, narrower, see also) and used-for (nonpreferred, variant) forms of that term. These used-for terms will automatically direct a user to records containing the preferred term. For example:

Lord's Supper	
Broader Terms:	Sacraments Sacred meals
Narrower Terms:	Aumbries Closed and open communion Sacrament houses Communion sermons Agape feast
Related Terms:	Last Supper Love feasts
Used For:	Jesus Christ — Lord's Supper Eucharist Holy Communion
Bipolar disorder	
Related Terms:	Affective disorders Psychoses
Used For:	Depression, Bipolar Manic-depressive illness Depression, Manic Bipolar depression Manic depression Manic-depressive psychoses Manic-depressive psychosis

8.8.2 Vocabulary Information in Nondisplayed Indexes

Many electronic databases are a combination of displayed and nondisplayed indexes: Searching for a nonpreferred term will return the same results as a search for the preferred term, without the user knowing that their search was redirected. Following the hyperlinked preferred term may bring the user to an authority record that includes related terms, narrower terms, broader terms, used-for terms, and scope notes. Users should have the option of seeing displays of other vocabulary information and selecting broader, narrower, or other related terms.

9 Headings and Locators

In book and other closed indexes, headings and entries are provided by an indexer based on analysis of the text.

In displayed online indexes (e.g., those for browser navigation), users should be able to use Boolean logic to combine terms for queries and/or to filter results. In nondisplayed indexes, terms are combined during a query. Search statements should not be restricted to these combinations. A best practice is to provide an advanced search interface that guides users in the construction of effective searches using index terms, including synonyms.

Every index, whether print, online, displayed, or nondisplayed, should incorporate some syntactic method that combines terms for searching in a consistent and predictable manner.

Locators are the paths that connect users from entries to content. Online indexes should link directly to resources through headings (subjects and named entities) and unique identifiers or locators.

9.1 Headings

In displayed indexes, an entry includes a main heading and a page number, paragraph number, or other locator that connects it to the content that the heading describes. An entry may include multiple levels of headings, subheadings, and sub-subheadings. Entries may go down several levels.

Identical main entries should be differentiated by adding a gloss or other disambiguator.

In print indexes, main entries and subentries should avoid long strings of undifferentiated locators. A continuous sequence of locators constitutes a single locator. For example, “economics 144–145, 195–200, 229–230.” However, when locators themselves contain distinguishing information, such as *f* or *t* indicating a figure or a table, or *n* indicating a footnote or endnote, they can be placed under the same heading or subheading.

In displayed electronic document indexes, an entry includes a main heading composed of one or more terms and hyperlinked locators.

9.2 Syntax

9.2.1 Syntax in Displayed Indexes

Syntax in displayed indexes is often called “pre-coordination” syntax because the terms are combined before the index becomes visible.

Cross-references should link synonymous, equivalent, broader, narrower, and other related terms. See [8](#), Vocabulary.

9.2.1.1 Ad Hoc Syntax

In closed indexes, syntax is often applied on a case-by-case basis. Individual headings are created as appropriate for the documentary units and needs of users.

In open indexes, syntax should be appropriate for ongoing usage.

9.2.1.2 Natural Language Syntax

Some indexes attempt to take advantage of the syntax or word order of existing segments of text (e.g., titles of documents) to provide syntax and context for index headings. Back-of-the-book indexes often use natural language syntax.

Keyword indexes in which titles or other text segments are arranged under keywords are another example of natural language syntax indexes. These indexes depend on the adequacy of titles and text segments of the documentary units. For example, some titles describe the content or features of documents; others do not. Such indexes conform to the minimum guidelines of this standard if the titles or text segments are augmented to ensure adequate representation of the content and features of documentary units, and if cross-references (or other linking methods) are included in their displays.

9.2.1.3 Subject Heading Syntax

Syntax may be provided with a controlled vocabulary, which generally includes headings consisting of pre-combined terms or terms combined in accordance with rules or patterns. Terms may be combined in three ways:

- a. Linking terms to each other by punctuation, such as em dashes, colons, or periods.

animals — diseases — chemotherapy
libraries : New Jersey : New Brunswick

- b. Modifying the lead term with a qualifier to distinguish between terms that have multiple definitions:

plates (engineering)
plates (tableware)

- c. Creating phrase headings:

social work with the homeless
telephone assistance programs for the poor

These guidelines advocate natural language word order for terms and headings. Inverted headings (e.g., “students, foreign”) reflect earlier practice and still exist in some controlled vocabularies. See also [8.2.4.1](#), Natural Word Order and Inversion.

9.2.2 Syntax in Nondisplayed Indexes

Syntax in nondisplayed indexes is often called “post-coordination syntax” because search terms are combined after indexing by the user at the point of need. This syntax is primarily determined by the search engine. It is critically important to understand the syntax of the search engine when designing the index.

Two common approaches to searching post-coordinate indexes include the use of Boolean operators (AND, OR, NOT) and the use of weighted terms. Post-coordination syntax may also include proximity operators, stemming, and truncation.

All syntax should be accompanied by cross-references linking synonymous, equivalent, broader, narrower, and other related terms. See also [8](#), Vocabulary.

9.2.2.1 Boolean Syntax

Boolean syntax, which combines terms using the operators AND, OR, and NOT, has become a de facto standard for nondisplayed indexes in online and digital resources.

9.2.2.2 Weighted Term Syntax

One function of an index is to discriminate between major and minor treatments of topics or manifestations of particular features (see [5](#), Function of an Index, item c). One method is to assign weights to indexing terms, which the search engine then uses to select more relevant materials, or to indicate major and minor terms with visual clues (e.g., the boldface type of main entries in an encyclopedia).

Index terms may be weighted to reflect importance or interest. These weights can further influence “retrieval scores” for ranking documents. Weighted combination searching rearranges databases along a continuum of estimated degree of interest based on the search statement.

9.2.2.3 Proximity Operators, Stemming, and Truncation

Both Boolean and weighted term combination syntax may be combined with a variety of methods for broadening or limiting the scope of a search statement.

Proximity operators ensure that search terms appear next to one another; within a certain number of words; or in the same sentence, paragraph, or field (part of a record; for example, title or abstract). “With” and “near” may have different meanings, depending on the database. The help screens should provide details.

Stemming reduces inflected (or sometimes derived) words to their word stem, base, or root form. The stem need not be identical to the root of the word.

Truncation is a mechanism for searching multiple terms that begin with a desired root word. For example, “build” with a truncation symbol will search for build, building, buildings, builder, etc. The symbol varies from database to database. The truncation symbol is frequently an asterisk (*), dollar sign (\$), or plus sign (+). In some databases, truncation is used to search for the root word only. The database documentation or help function should provide exact details.

9.2.2.4 Role Indicators, Semantic Relationships, and Other Item Metadata

Additional syntactic devices and metadata specify the function of concepts represented by terms in documentary units (e.g., role indicators or qualifiers as modifiers for identical terms). See also examples in [8.3, Disambiguation of Terms](#).

Role indicators can be applied during indexing to make post-coordinate searching more precise. Role indicators can consist of role terms or special notation; they may be managed as an additional facet of the controlled vocabulary or as an independent controlled vocabulary. Terms should not be precoordinated with their roles. (See ANSI/NISO Z39.19 for additional guidance.)

Semantic relationships established within the controlled vocabulary should be used whenever possible. Depending on the search engine and user interface, there are multiple ways to filter content, for example, displaying broader, narrower, synonymous, equivalent, or related indexing terms in the search results.

9.2.2.5 String Indexing

String indexing uses computer algorithms to combine multiple terms into multiple headings. Each heading has a different term as its lead or main term. The set of terms is treated like a “string” or sequence of terms that is rearranged under each lead term. The terms themselves may be assigned by human indexers, but their manipulation into index entries is governed by computer algorithms.

For example:

Private flying — Accidents — United States
 Accidents — Private flying — United States
 United States — Private flying — Accidents

9.3 Locators in Indexes

A locator leads the user to the documentary unit or to a description of the documentary unit that the index entry refers to. The nature of the locator depends on the type of material indexed, the medium, the type of index, and the type of documentary unit. In online or digital indexes, index terms or headings may be hyperlinked to documentary units, unique identifiers (metadata), or other surrogates, and their locators may not be immediately visible.

Locators should refer and link as directly and precisely as possible to the documentary units to which index headings refer.

9.3.1 Locators for Printed or Electronic Documents

Printed documents normally consist of numbered pages bound into one or more volumes, and page numbers are usually the locators in the index. If text is divided in some way (e.g., into sections, columns, or paragraphs), the numbers of the dividing units may be used instead of, or in addition to, page numbers.

In some types of printed or electronic material, inherent textual units are numbered and may therefore be used as locators. For example, locators for plays may refer to act, scene, and line number; locators for the Bible may refer to chapter and verse number. Similarly, when a document consists of a series of uniquely numbered discrete units (e.g., abstracts, quotations, or case reports), the unit numbers may be used as locators.

For periodicals and other serial publications, locators should include the volume and issue number. When documentary units are part of a collection (e.g., articles in a periodical, chapters in a monograph, or letters in an archive), the locator should be sufficient to identify the document. For periodical articles, a locator may include: author(s), title of article, title of periodical, volume, issue number, inclusive pagination, and date. When available, DOI, ISSN, or ISBN may be appropriate metadata to use as part of the locator string. The content, format, punctuation, and order of elements should conform to ANSI/NISO Z39.29-2005 (R2010), *Bibliographic References*.

NOTE: The international standard ISO 690: 2010 (E), *Documentation—Guidelines* for bibliographic references and citations to information resources, prescribes a different order of elements. Abbreviation of names and titles should be avoided, especially if such names and titles may be searched electronically.

9.3.2 Locators for Documents in Other Media

Documents in other media may be divided into three types:

- a. Those with one or more sequences that are, or may be, continuously numbered. Examples are slide collections, filmstrips, audiodiscs, or machine-readable databases. Locators would be slide numbers, frame numbers, side and band numbers, and record identifiers, respectively.
- b. Those without numbering. Examples are motion picture film and audio and video recordings. These may require ad hoc locators, such as playing time designations or time codes.
- c. Collections of materials such as maps, plans, charts, pictures, sculptures, and realia. Some may have conventions, like grid references or coordinates. Others may require ad hoc locators.

The explanatory note should include conventions for ad hoc locators.

NOTE: Most machine-readable text files fall into the first two categories, above. Locators may be hyperlinks between terms or headings, or text segments with embedded markers.

10 Display of an Index

In print media, index entries are displayed in ordered arrays. In electronic indexes, search results are often displayed by matching terms and relevance ranking. Electronic index displays may suggest options for searching (broader and narrower terms, see also) and permit browsing. Such displays should be arranged in an order helpful to the intended audience and should also follow methodical ordering.

All index displays should comply with available accessibility standards, both for back-of-book indexes and other indexes. Important standards include Section 508 of the Rehabilitation Act as well as the most recent Web Content Accessibility Guidelines (WCAG) from the World Wide Web Consortium (W3C).

For machine readability, sources should follow FAIR metadata standards (Findable, Accessible, Interoperable, Reusable). The Dublin Core Metadata Initiative (DCMI) has also established and maintains metadata standards relevant to machine-readable indexing.

10.1 Explanatory Notes for Indexes

An explanatory note/headnote should be included for conventions that are not self-explanatory.

Explanatory notes should be listed as running headers or footers on printed index pages or display screens. Users may access an index at any point; an explanatory note at the beginning of an index may go unnoticed by many users.

Abbreviations, symbols, or typographical conventions that require explanation should be included in these notes. For separately published indexes, explanatory notes should include sufficient bibliographic information (for example, author, title, publisher, place and date of publication or periodical volumes/issues) to completely identify the documents indexed. See also [7](#), Design of Indexes.

10.2 Index Display in Print Media

All indexes should be displayed for maximum ease of use, clarity, and legibility.

10.2.1 Typography

The typography of printed indexes should be clear and legible. Different type styles (for example, bold, italics, or small capitals) may be used to distinguish types of entries, such as illustrations or titles of works. Different typefaces or styles may also be used to distinguish main headings and subheadings, as in encyclopedia entries. Such conventions should be defined in an explanatory note.

10.2.2 Arrangement of Entries

For most index displays, commonly accepted ordering of alphanumeric characters is preferred. Options for alphanumeric arrangement are discussed in [11](#), Alphanumeric Arrangement.

Structured arrays (as opposed to alphanumeric arrays) can break up large sequences into smaller, useful segments. Groupings can be based on relationships among concepts (as in classification schemes) or the meaning or type of concepts (for example, persons, places, other entities, texts). Structured arrangements can be detrimental to searching when the basis for their arrangement is unclear to users.

Classified or relational displays are based on relationships among concepts. Examples include superordination and subordination, class inclusion, chronology, and various roles and associations. A classified display should be accompanied by an alphabetic or alphanumeric index unless the classified array is very short and can be scanned quickly.

The basis for any arrangement should be stated in the explanatory note.

10.2.3 Recurring Elements

Adjectives and adjectival forms should not be used as main headings. Repeated noun phrases using recurring terms may be used.

For example:

- Labor
 - in factories
 - in farms
 - history of
 - monopolistic markets
- Labor legislation
- Labor unions

10.2.4 Spacing

Major sections of an index should be separated by at least one blank line. A letter divider may also be used. In alphanumeric indexes, headings that begin with numbers or symbols should appear before the alphabetical headings.

10.2.5 Entry Layout

Entry layout will depend on syntax, length of entries, medium of display, and space available. When subheadings and sub-subheadings are used, they may be presented in an indented layout, a “run-in” layout (also called “paragraph style”), or a hybrid of the two styles.

Indented subheadings are preferable to run-in subheadings because users can scan them more quickly. However, where economy dictates space-saving measures, run-in subheadings are preferable for reducing the space used by index display. In all layout styles, all items on the same level of subdivision should be indented by the same amount of space or delineated by the same punctuation mark, such as a semicolon.

10.2.5.1 Indented Layout

In the indented layout, each subheading and sub-subheading begins on a new line, progressively indented. All items on the same level of subdivision should be indented by the same amount of space.

In the indented layout, a turnover line should be indented more deeply than the indentation of a subheading in the same entry.

10.2.5.2 Run-In Layout

The run-in layout is limited to two levels of heading (main heading and subheadings).

All items on the same level of subdivision should be delineated by the same punctuation mark, such as a semicolon. When there are no locators between headings at two different levels, the two levels should be separated by a colon.

10.2.5.3 Hybrid Indented/Run-In Layout

When more than two levels of heading are used (main heading, subheading, sub-subheading), the run-in layout may be combined with the indented layout, the indented layout being used for main and subheadings, and the run-in layout being used for sub-subheadings.

This hybrid indented/run-in layout is the most complex. An example is shown here:

Aristotle
 debt to Plato 23, 26
 literary criticism in 35, 74, 89-93, 101-197; on Aeschylus 101-104, 279; on Aristophanes 195; on
 Euripides 104-126, 187, 265-266; on Homer 103, 190-194, 206; on Sophocles 127-183, 275-277,
 306, 309-310
 origins of tragedy: in epic 196; in revelry 197

In the hybrid layout, whenever a line “turns over” to the next line, all lines after the first line should be indented more deeply than the deepest subheading indentation employed in the index.

10.2.6 Running Headers or Footers

An index display should bear a running header or footer. When multiple indexes are displayed, the headers or footers should indicate the type of index. For separately issued indexes, the words “Index to [title of work]” should be included. A running header at the top of a page or screen should be differentiated from the guidewords that may appear at the left and right margins of a two-page spread.

10.2.7 Guidewords

Guidewords (also called “catchwords”) may be used to indicate the scope of entries on a two-page spread, reproducing all or part of the first and last heading. Guidewords are positioned at the upper left margin on a verso (left-hand page) and at the upper right margin on a recto (right-hand page).

10.2.8 Columns

Indexes are displayed in multiple columns per page or screen. In large-size documents, they may be set in three or four columns. Indexes with long entries (e.g., an index of first lines or a table of cases in legal works) may be set to full page width.

Column width should be set to avoid turnover lines as much as possible for ease of use and readability.

10.2.9 Continuation Lines

When displaying indexes in pages or columns, some entries or entry arrays will continue from the bottom of one column or page to the top of the next column or page. Continuation of very short parts of entries or of entry arrays from one column or page to the next should be avoided. Examples are one or two locators or the final line of an alphanumeric section of the index. Similarly, the initial line of an entry that begins a new alphanumeric sequence should not fall at the bottom of a column or page.

When an index entry or entry array runs on to a new column or page, the index heading and any subheading and sub-subheading applicable to the run-on entries should be repeated, followed by “(continued)” or the abbreviation “(cont.)” after each level of heading.

10.3 Index Display in Electronic Media

When electronic indexes provide options for scanning and browsing, or for display of retrieved records, the display screens and documentation should describe options for format; completeness of entries or records; and ordering of arrays.

Effective electronic displays are easy to use and navigate. Combinations of pictorial, tabular, graphic, animated, and verbal elements may be useful.

10.3.1 Browseable Index Displays

When the viewing area (screen) in electronic media is small or constrained, it is helpful to display index entries in stages.

For example, when entries consist of main headings and subheadings, the initial display may be limited to main headings. Once a main heading is selected (by highlighting or clicking, for example), then the subheadings linked to that main heading will be displayed. Similarly, when a subheading is selected, progressive disclosure of sub-subheadings, locators, document citations, or other surrogates can be displayed.

Captions, headings, and prompts should show users where they are in the index and how they may move around.

10.3.2 Display of Retrieved Records

In displays of retrieved records (surrogates or items), users should be able to control the fullness of display ranging from brief (for example, title and author only) to full (for example, title, author, full citation, abstract).

Users should also have options for the arrangement of retrieved records. For example:

- reverse chronological order
- ranked according to potential relevance
- classified by facets or a classification scheme
- ordered alphanumerically:
 - by index terms
 - by headings
 - by citation elements like authors, titles, publishers, or dates

10.4 Electronic Manuscripts

When indexes designed for print are transmitted via electronic media, typographic coding should conform to ISO 12083, *Electronic Manuscript Preparation and Markup*.

10.5 Locators

Locators should be clearly separated from headings by spacing, punctuation, or both. For example, by two spaces, by a comma or colon plus one space, or by a space colon space. The method used depends on the headings, the punctuation, and the text. Headings that end with dates or other numerals should not use a comma plus space to introduce locators:

Paris, 1989: 1934, 2045 [not Paris, 1989, 1934, 2045]
 vitamin B-12: 13, 15 [not vitamin B-12 13, 15]

Hyperlinked headings and locators should adhere to display conventions, e.g., underlined blue font (or a font other than nonhyperlinked text).

10.5.1 Methods of Emphasizing Locators in Indexes

In a closed index, if an entry array includes several locators, the locator leading to the fullest or most significant treatment may be emphasized typographically. In open indexes, significant treatments may be

indicated in similar ways, such as special symbols accompanying locators that point to more comprehensive treatments.

Locators with an *f*, *t*, or *n* indicate figures, tables, and notes, with italics, brackets, or prefixed or suffixed with an “i” or asterisk. Where more than one type of material is indicated, it is preferable to use the same system for all (for example “m” for maps, “t” for tables, “f” for figures).

Note: Methods of emphasizing locators should be explained in a running explanatory note or in the headnote. See also [10.1](#), Explanatory Notes for Indexes.

See also [9.2.2.2](#), Weighted Term Syntax.

10.5.2 Presentation of Other Identifying Data

The more information included in the locator string, the more successful the end user will be in finding and selecting the resource. Some displayed indexes add information to citation locators indicating photographs, tables, and other illustrations or features. In the case of displayed indexes, this additional information should be placed after the locator, separated from it by a period. For example:

Doe, John. The indexing of pictures. *Journal of Indexing*. 2: 25–87; 1983. 4 illustrations (1 colored), 1 table, bibliography.

Any abbreviations should be explained in a running explanatory note.

When available, unique identifiers (e.g., DOI, VIAF, ORCID, LCCN, OCN, ISSN, or ISBN) should be used as part of the locator string. If displaying a unique identifier, the locator string should be resolved into the human readable form. For example, rather than displaying the DOI for the resource “Toward unique identifiers,” the entry should read “(see [“Toward unique identifiers”](#)).”

11 Alphanumeric Arrangement

11.1 Standards

This section provides rules for arranging (sorting) alphabetic characters and numerals in headings in print and online indexes. Although the display of terms in a print index may differ from that of an electronic index, the sorting principles apply in both cases.

Two standards for sorting and filing widely used in libraries and databases in the United States are the *ALA Filing Rules* and the *Library of Congress Filing Rules*. The guidelines for alphanumeric arrangement in *The Chicago Manual of Style* are used as a de facto standard by many print publishers. These standards are incompatible with one another. A single standard should be chosen as the authority for an index.

The guidelines presented here are based primarily on the *ALA Filing Rules*. Standards specific to controlled vocabularies and thesauri may be found in ANSI/NISO Z39.19, Section 9.2.6. Another resource is NISO TR-03-1999, *Guidelines for Alphabetical Arrangement and Sorting of Numerals and Other Symbols*.

These guidelines recommend that alphanumeric order be as simple and straightforward as possible. Indexes should be based only on characters with a widely known and accepted sorting order. For example, English-language indexes should use the twenty-six letters of the English alphabet, the ten Arabic numerals, and the space. If another arrangement is used, it should be explained in the headnote.

11.2 Basic Order

Characters are usually ordered as follows:

- a. Spaces, punctuation marks, and symbols other than letters and numerals: All characters in this group have equal sorting value and are placed before any numeral or alphabetic letter. All are treated as if they were a space. Multiple consecutive spaces and their equivalents are considered equal to a single space.
- b. Numerals (0 through 9): Numbers expressed in numerals are arranged according to ascending arithmetical value. See also [11.8](#), Numerals.
- c. Letters (A through Z): Lowercase and uppercase letters have equal sorting value. Letters modified with diacritics are treated like their basic equivalents in the English alphabet. For example, o, ó, ò, ö, and ø all have the same sorting value as the unmodified o. If nonalphanumeric symbols are prominently featured and must be sorted, a system for their arrangement should be devised and explained.

Optionally, the ampersand (&) may be arranged as its spelled-out language equivalent (for example: and, et, und, y).

Sorting in the electronic environment depends upon the software or system that is used.

11.3 Word-by-Word Versus Letter-by-Letter Arrangement

Index headings should be arranged either word-by-word or letter-by-letter. In word-by-word order, a space comes before a letter or numeral. This order, which is standard in library catalogs, will cause headings beginning with the same word to be placed next to each other, with no regard for capitalization. For example:

N.Y.S.E. constitution and rules
 New, Agnes
 New Brunswick
 new journalism
 new moon
 New, Thomas
 New York
 Newark
 Newfoundland
 news
 news agencies
 news (journalism)
 news-letters *see* newsletters
 news photography
 newsletters
 newspapers
 NEXIS (information retrieval system)

The alternative arrangement, letter-by-letter, disregards the space and symbols that have the same sorting value as a space:

New, Agnes
 Newark
 New Brunswick
 Newfoundland
 new journalism
 new moon
 news

news agencies
 news (journalism)
 newsletters
 newspapers
 news photography
 New, Thomas
 New York
 NEXIS (information retrieval system)
 N.Y.S.E. constitution and rules

11.4 Initial Articles

Initial articles in any language are ignored in sorting titles, first lines, topical subject terms, and names of corporate bodies:

Der Blaue Adler (association)
 The Club (London)
 The Library Association (United Kingdom)
 The Movement (English poetry)
The Nutcracker (ballet)
Les temps
An unlikely one will guide me
Der Zauberberg

Exceptions are initial articles that form an integral part of a proper name:

El Paso
 Le Guin, Ursula K.
 Los Angeles
 The Dalles
 The Gap, Inc.

For last names, it depends on the language. See Noeline Bridge's *Indexing Names* in [Appendix A](#).

11.5 Subheadings

Concept subheadings in printed indexes are usually arranged alphabetically with initial prepositions omitted where possible:

computers
 compared with abacus
 in hospitals
 for management
 management of

 management
 of computers
 use of computers

This does not apply to prepositions in book titles:

A Tale of Two Cities
Anna Karenina
Teacher Man
The Zoo Story
Zeitoun

Subheadings may be arranged chronologically or in some other way if the arrangement is helpful and obvious to users:

Music history and criticism
to 400 A.D.
medieval, 400–1500
20th century

More on prepositions can be found in ISO 999:1996 Information and documentation — Guidelines for the content organization, and presentation of indexes, section 7.2.2.5.

11.6 Headings with the Same Initial Term

Headings beginning with the same term should be arranged in the following sequence:

- a. Term alone, with or without subheadings

Example:

Labor contracts
Labor unions

- b. Term with qualifier or as the lead term of a longer heading

Example:

Labor (birth)
Labor (work)

- c. Some indexes arrange headings beginning with the same word based on the nature of the heading or the nature of the item represented (for example, forename or surname; person, corporate body, place name, topic, or title; type of subdivision). Such arrangements can help break up long sequences of entries by grouping headings of similar type, but they can also confuse users who do not understand the basis of the arrangement. When headings are arranged using nonalphanumeric criteria, the criteria should be explained in the headnote.

11.7 Cross-References

A cross-reference introduced by “see” or “see also” or analogous linking terms is not part of a heading and does not affect the position of the heading in an alphabetical sequence.

11.8 Numerals

Headings beginning with numerals should be arranged according to ascending arithmetical value before the alphabetical sequence. Roman numerals are arranged with their Arabic counterparts (not by their constituent letters). For example, “XIX” is placed before or after “19,” depending on the characters (numerals, letters, or spaces) following the numbers.

When numerals occur within headings or subheadings, they should be arranged according to ascending arithmetical value.

Numerals as prefixes or as parts of names of chemical compounds in biomedical and chemical texts may be disregarded unless needed to distinguish homographs.

Glossary

(This appendix is not part of *Criteria for Indexes*, ANSI/NISO Z39.4-2021. It is included for information only.)

This glossary provides definitions for terms as they are used in this standard. Within definitions, terms that have their own definitions are in italics. Defined terms are listed in alphabetical order in the singular noun form; however, within other definitions, corresponding terms may appear as plural nouns, adjectives, or other forms.

<u>Term</u>	<u>Definition</u>
accession number	A number or code assigned to uniquely identify records or materials and that may be used to link the materials to associated records. Accession numbers may consist of one or several parts.
algorithmic analysis or algorithmic indexing	A method of indexing that uses computer algorithms to select and extract terms from text. Other algorithms may be used to create and format headings for display; to match terms against a thesaurus for linking synonymous, equivalent, and related terms; to assign weights to terms; and to cluster related terms.
alphanumeric arrangement	An index display in which headings are arranged in alphanumeric order. Contrast with <i>relational display</i> .
arrangement	The ordering of entries in alphabetical, numerical, or other stated and consistent order. Also called filing, sorting.
array	A displayed sequence of terms, headings or entries. See also <i>entry array</i> ; <i>file</i> .
articulated heading	See <i>multilevel heading</i> .
associative relationship	A nonhierarchical relationship among terms that are conceptually or semantically linked, for example, “cooking” and “food.” Terms with an associative relationship are called “related terms.”
authority file	A set of records of established descriptors or headings and their cross-references, often citing the authority for the preferred form or variants. Authority files include name authority files, subject authority files, and thesauri. See also <i>descriptor</i> ; <i>vocabulary control</i> ; <i>subject heading list</i> .
Boolean operators	The logical operators AND, OR, and NOT, which can be used to combine terms for searching in post-coordinate

<u>Term</u>	<u>Definition</u>
	information retrieval systems. See also <i>post-coordination</i> .
broader term	A term to which another term or multiple terms are semantically subordinate in a hierarchy. See also <i>narrower term</i> ; <i>related term</i> .
class	A set whose members share an attribute, characteristic, property, quality, or trait.
classification	Grouping concepts or entities into classes and establishing relationships among these classes. Headings representing classes are usually arranged in arrays that illustrate relationships among classes, creating a classified index, as opposed to an alphanumeric index. See also <i>relational display</i> .
classification scheme	A method of organization according to a set of pre-established principles, usually characterized by a notation system and a hierarchical structure of relationships among the entities.
classified display	See <i>relational display</i> .
closed index	An index for one or more documents to which additional entries will not be made. Contrast with <i>open index</i> .
collection	The material to which reference is made or expected to be made in an index; e.g., those documents scanned by an indexing service or a database of abstracts. Both collection and index may expand indefinitely.
compound term	A term consisting of more than one word or phrase that represents a single concept, for example, "compass rose," "first aid," "trade winds"; also a multiword term representing multiple concepts that are so often considered together that representing them with separate terms would be unwieldy and could result in false drops, for example, "science information" and "information science." Also called "bound term."
concept	A unit of thought, formed by mentally combining some or all the characteristics of a concrete or abstract, real or imaginary object, attribute, material, process, operation, event, place, or time. Concepts exist in the mind as abstract entities independent of terms used to represent them. See also <i>topic</i> ; <i>feature</i> .
controlled vocabulary	A subset of the lexicon of a natural language and a list of terms that may be used for indexing. Common forms of controlled vocabularies for indexing are subject heading lists and thesauri.

cross-reference	<p>A link between two or more terms or headings in an index. Relationships among terms that require cross-references include: (a) equivalence relationships among synonymous or equivalent terms or headings, (b) associative relationships indicating unspecified relationships among terms or headings (called related terms or headings), and (c) hierarchical relationships indicating broader/narrower relationships among terms or headings. In closed and book indexes, cross-reference prefixes are of the “see” and “see also” form. Hierarchical relationships may display in an open index based on a thesaurus, where full thesaural relationships are displayed.</p> <p>See also <i>broader term</i>; <i>narrower term</i>.</p>
depth of indexing	Sometimes called granularity, depth of indexing is the level of detail that will be put into the index. Also tied to <i>exhaustivity</i> .
description	A textual description of content, including abstracts for document-like objects. May also be a content description for visual resources.
descriptor	A term for a concept or feature in an index. See also <i>subject heading</i> .
digital object identifier (DOI)	A standard string of characters used to distinguish and identify intellectual property in an electronic environment over an extended period of time.
disambiguation	The process of making clear, often by use of modifiers, the sense or context of a word, subject term, or heading so it is not confused with other meanings. Also known as lexical disambiguation. See also <i>modifier</i> .
display	See <i>alphanumeric display</i> ; <i>relational display</i> .
displayed index	An index that may be searched by visual inspection.
document	The combination of the message and the medium in which it is encoded. The term applies to both written and printed materials (for example, books, journals, maps, diagrams), and to nonprint media (for example, machine-readable records, transparencies, audio recordings, video recordings, film), and, by extension, to natural or humanly made objects intended to convey information. Documents encompass every kind of format and genre, including but not limited to treatises, literary works, patents, technical reports, charts, tables, illustrations, music, artistic works, and multimedia texts.
documentary unit	The document, document segment, or collection of documents that entries in an index refer to. Examples include sentences, paragraphs, pages, complete articles, books, complete serial runs, collections of

	archival materials, microform sets, and entire library collections.
Dublin Core (DC)	A standard (ISO 15836, ANSI/NISO Z39.85) that defines metadata elements used to describe and provide access to online materials. The data elements of unqualified Dublin Core include title, creator, subject, description, publisher, contributor, date, type, format, identifier, source, language, relation, coverage, and rights. In qualified Dublin Core, elements may be refined for greater specificity.
entry	A unit of information in a displayed index. It includes a main heading and a page number, paragraph number, or other locator that connects it to the content that the heading describes. An entry may include multiple levels of headings, subheadings, and sub-subheadings. Entries may go down several levels.
entry array	A sequence of entries under the same heading in a displayed index.
entry term	A synonym for a main heading or lead term.
equivalent term	A term such as a synonym or quasi-synonym that can be used interchangeably with another term, because the meaning is sufficiently synonymous for the context.
exhaustivity	The extent to which concepts and topics in the documentary units are in the index. Sometimes measured by the average number of terms assigned to a documentary unit in an index or retrieval system.
facet	A grouping of concepts of the same inherent category or aspect. Examples that may be used for grouping concepts into facets include activities, disciplines, people, materials, places, etc.
false drop, or false hit	An irrelevant reference retrieved when terms match, but meanings are unrelated because of homography (for example, “fans” retrieving references to rotating blades when devotees are intended), or a confusing combination of terms (“school” and “library” retrieving references on library schools, when school libraries are intended).
feature	An aspect of a document other than a topic. Features may include authorship, style, methodology, quality, usefulness, level of complexity, language, format, metadata, publication date, etc.
file	A sequence or array of two or more entries or records in an index or an information retrieval system. In the context of computers, the term is now also used for a computer-readable text.

filing	See <i>arrangement</i> .
form	Designation of a resource as electronic, print, microform, or another format.
format	The data representation of a resource, e.g., text/HTML, ASCII, Postscript file, executable application, or JPG image.
free-text term	See <i>natural language</i> .
genre	A category for a particular style, form, or content, e.g., artistic, musical, literary composition, etc.
gloss	An in-line or marginal explanation of a word or phrase in a text. See also <i>disambiguation</i> .
guideword	A term or heading placed at the top left margin of a left-hand page and the top right margin of a right-hand page to indicate the scope of entries on a two-page spread in a displayed index.
heading	One or more terms representing a topic or feature of a document in a displayed index. See also <i>main heading</i> ; <i>subheading</i> .
hierarchy	A system of ranked terms in which a superordinate or higher term is broader in semantic scope than a subordinate or lower term. Hierarchical arrays display narrower terms under broader terms.
homograph	Terms that have the same spelling, but different meanings, e.g., “race (anthropology)” and “race (sports).” Homographs should be distinguished by qualifiers.
identifier	A proper name (or its abbreviation) of a person, institution, place, object, operation, or process, optionally treated as a type of term distinct from descriptor. Identifiers may be held in a separate file, such as an authority file, and their form may be controlled (for example, the name of an international organization having different names in various languages, only one of which is selected as an authorized term or descriptor). For metadata, an identifier is a string or number used to uniquely identify the resource. Examples from networked resources include URLs and URNs (when implemented). See also <i>keyword</i> .
indented layout	The display of headings in a multilevel entry array where each new subheading and sub-subheading begins on a new line, progressively shifted to the right. Also known as “line-by-line” or “set-out layout.”

index	A systematic guide to facilitate retrieval of content. Indexes include the following major components: (a) headings representing topics or features; (b) cross-references or other linking devices among synonymous, equivalent, broader, narrower, and other related terms; (c) locators. An index serves as an information retrieval aid to the text or documents it accompanies.
indexable matter	The portions of documents that are analyzed and indexed.
indexing	The process of creating an index for information retrieval. Indexing involves (a) selecting and assigning or extracting terms from a documentary unit; (b) combining or tagging terms for headings; (c) linking synonymous, equivalent, broader, narrower, or other related terms or headings; (d) linking terms or headings to documentary units or surrogates; (e) arranging headings in systematic order in displayed indexes; and (f) selecting and assigning locators.
indexing language	The language used in an index for representing topics and features. In a broad sense, any vocabulary used for indexing and the rules of syntax for its application. In a narrower sense, a controlled vocabulary or classification system and the rules of syntax for its application.
information	Refers both to substantive content and to the process of informing or becoming informed.
information retrieval system	A set of operations and the associated equipment, procedures, and algorithms by which documentary units are stored and retrieved.
keyword	A word occurring in the natural language of a document or its surrogate that is used for indexing and retrieval.
lead-in term	Any cross-reference that leads to one or more index terms.
lead term	The first term in a heading. See also <i>heading</i> ; <i>main heading</i> .
link	A syntactic device used to indicate terms that may be combined. See also <i>role indicator</i> .
locator	The part of an index entry that indicates where the information is found. Locators range from brief notations, such as page numbers, to full bibliographic citations.
main heading	The first heading in an index entry or record, followed at minimum by a locator.

medium, media (pl)	The physical entity on or in which a message is recorded.
metadata	Data that provides information about other data. For indexing, relevant metadata includes unique identifiers (numbers or alphanumeric strings), date and time the document or object was indexed or indexing information was modified, title, and author(s) of the document.
modifier	In a compound term, one or more components that narrow the focus. See also <i>disambiguation</i> .
monographic index	An index compiled for a single document. See also <i>closed index</i> .
multilevel heading	A heading consisting of a main heading that is modified by a subheading. The subheading may in turn be modified by a sub-subheading and possibly by additional headings at successive levels of subordination.
narrower term	A term that is subordinate to another term in a hierarchy. See also <i>broader term</i> ; <i>related term</i> .
natural language	A language used by human beings for verbal communication. Words extracted from natural language texts for indexing purposes are often called keywords.
near-synonym	See <i>quasi-synonym</i> .
nondisplayed index	An index where the complete index itself is not displayed for visual search and is searched usually by electronic comparison and matching with computer algorithms.
nonpreferred term	A synonym, lexical variant, or equivalent term that serves as a lead-in term. Non-preferred terms should be linked to preferred terms or headings by cross-references or other links.
note	General textual information relating to a resource.
open index	An ongoing index compiled at set intervals or continuously updated.
paragraph layout	See <i>run-in layout</i> .
post-coordination	Combining terms for a compound concept, for example, “cataloging” + “periodicals” for the concept “cataloging of periodicals.” See also <i>pre-coordination</i> .
pre-coordination	Formulating multiterm or multilevel heading for a compound concept in a displayed index, for example, “cataloging of periodicals” or “cataloging — periodicals.” Pre-coordination differs from compound terms as descriptors, for example, “birth control” (a compound

	term) versus “birth control — education — United States” (pre-coordinated terms).
preferred term	See <i>descriptor</i> .
proximity operator	A search operator that specifies two or more search terms that fall within a stated distance of each other.
qualifier	A word or phrase added to a term to distinguish among homographs or to clarify meaning, for example, “races (anthropology),” “races (sports).” A qualifier is considered part of a term or heading. All qualifiers except epithets (for example, king, saint) should be put in parentheses. See also <i>modifier</i> , <i>scope note</i> .
quasi-synonym	A term whose meaning is not exactly synonymous with that of another term, yet which may be treated as its equivalent in a particular index. See also <i>equivalent term</i> , <i>generic posting</i> , <i>synonym</i> .
record	The description or representation of a documentary unit in an index. The record usually includes the author, title, abstract, terms or descriptors, unique identifier, and location or text of the document.
related term	In thesauri, a term that is associatively but not hierarchically linked to another term in a controlled vocabulary. Related terms are indicated by RT.
relational display	A display based on relationships among concepts in headings. Relationships may include super-ordination, subordination, class inclusion, chronology, roles, and other associations. Also called “classified display.” Contrast to <i>alphanumeric display</i> . See also <i>classification</i> .
role	Action by which the topic represented by a term relates to the topic represented by another term. A role does not indicate either a hierarchical or an associative relationship.
role indicator	A word, phrase, abbreviation, or symbol identifying the role of a topic represented by a term.
romanization	The conversion of text into the Latin alphabet.
run-in layout	The display of multilevel headings in an entry array with subheadings and sub-subheadings arranged in a single paragraph indented under a main heading. Also known as “paragraph” or “run-on layout.” In this layout, sub-subheadings can only be displayed with special punctuation or in a hybrid layout, mixing indented subheadings and run-in sub-subheadings. See also <i>indented layout</i> .

run-on layout	See <i>run-in layout</i> .
scope headline	See <i>guideword</i> .
scope note	An explanation, definition, or clarification of a term. A scope note is not part of a term. See also <i>qualifier</i> .
search statement	One or more terms or phrases submitted to an electronic nondisplayed index for locating entries or records of interest. Terms may be combined with syntax rules, such as Boolean logic. Terms may also be truncated or combined with delimiters, such as proximity operators.
“see also” reference	A cross-reference linking two or more terms or headings to suggest broader, narrower, or other related terms or headings.
“see” reference	A cross-reference from an unused or nonpreferred term or heading to the preferred term or heading. In nondisplayed indexes, synonymous and equivalent terms may be linked so that all terms are included in a search.
serial index	See <i>open index</i> .
set-out layout	See <i>indented layout</i> .
sorting	See <i>arrangement</i> .
specificity	The closeness of fit between the meaning of a term and the topic or feature it refers to. “Specific” does not mean “narrow.” A specific term may be broad or narrow depending on the topic or feature it refers to and its relationship to broader or narrower terms.
stemming	The removal of suffixes and/or prefixes from terms. See also <i>truncation</i> .
stop list or stop-word lists	A list of words or terms considered of no value for retrieval. These often include common terms like articles or prepositions (typically ignored when sorting), words that occur very frequently in the index, or words for which retrieval is deemed undesirable, such as profanity or slurs. Electronic indexes can be configured to skip these terms, allowing for faster and more accurate retrieval and to reduce the size of the index backfile.
string indexing	Creating multilevel headings or “strings” of terms from individual index terms. Index terms may be coded, sometimes by facet or role. A string indexing algorithm puts each important term in the lead position as main heading and arranges other terms as subheadings.
sub-subheading	A heading subordinate to a subheading in a multilevel heading.

subheading	A heading subordinate to a main heading in a multilevel heading.
subject	See <i>concept</i> ; <i>feature</i> ; <i>topic</i> .
subject heading	The name, noun, or noun phrase used to indicate the topic of a documentary unit. Subject headings are used in displayed indexes and library catalogs.
surrogate	A representation of a documentary unit in an index or information retrieval system, e.g., a citation or citation plus abstract.
synonym	A term having a different form, but exactly or very nearly the same meaning as another term. See also <i>equivalent term</i> ; <i>quasi-synonym</i> .
syntax	The combination and modification of terms to form headings and subheadings or to form search statements for nondisplayed indexes; also, the rules for such combination.
term	A word or phrase used to represent a topic or feature of a documentary unit.
text	Any organized and meaningful pattern of symbols in a document. A text may be verbal (a representation of speech by a writing system); visual, as in the visual arts; musical, as represented by musical notation; performance, as represented by choreography notation; aural, as in sound recordings; etc. Many disciplines, such as chemistry and mathematics, have special symbols to represent texts. See also <i>message</i> .
thesaurus	A vocabulary with links among synonymous, equivalent, broader, narrower, or other related terms. An indexing thesaurus is a controlled vocabulary in which equivalent, hierarchical, and associative relationships among terms are identified by relationship indicators. Its purposes are to promote consistency in indexing, predominantly for post-coordinate information retrieval systems, and to facilitate searching by linking lead-in terms with descriptors.
topic	An entity, attribute, material, process, operation, event, place, or time period, etc., treated in a document. See also <i>concept</i> ; <i>feature</i> .
transliteration	See <i>romanization</i> .
truncation	Removal of letters from search terms to increase the number of terms that will be matched in electronic searches. See also <i>stemming</i> .

turnover line	A line indented beneath another to accommodate words that cannot fit on the preceding line.
uncontrolled vocabulary	Terms derived by extraction or selection of significant words or phrases, usually from full text, titles, or abstracts. May also refer to freely chosen search terms. See also <i>free text</i> .
unit of analysis	See <i>documentary unit</i> .
up-posting	Automatically assigning broader terms in addition to the specific term for indexing. See also <i>generic posting</i> ; <i>specificity</i> .
“used for” term	See <i>lead-in term</i> ; <i>nonpreferred term</i> .
visual index	See <i>displayed index</i> .
vocabulary control	The process of organizing a list of terms: to indicate (a) which of two or more equivalent terms are authorized for use, and (b) the hierarchical and associative relationships among terms. See also <i>authority file</i> .
weighting	The assignment or algorithmic calculation of weights for search terms to permit ranking of retrieved items. Weighting algorithms are often based on term frequency in documentary units, sometimes in relation to frequency across collections. Previous relevance judgments can also be used to increase or decrease weights for terms that lead to relevant documents.

Appendix A: Additional Resources

(This appendix is not part of *Criteria for Indexes*, ANSI/NISO Z39.4-2021. It is included for information only.)

A.1 Basic source materials

American Society for Indexing. *Indexing Best Practices: ASI Guide*. <https://www.asindexing.org/best-indexing-practices/>.

Bridge, Noeline, ed. *Indexing Names*. Medford, NJ: Information Today, 2012.

The Chicago Manual of Style. 17th ed. Chicago: University of Chicago Press, 2017.

Institute of Certified Indexers. *Indexing Best Practices*.
http://www.certifiedindexers.com/indexing_best_practices.pdf.

Mulvany, Nancy C. *Indexing Books*. 2nd ed. Chicago: University of Chicago Press, 2005.

A.2 Additional reading

Badgett, Nan. *The Accidental Indexer*. Medford, NJ: Information Today, 2015.

Browne, Glenda, and Jon Jermey. *The Indexing Companion*. Cambridge: Cambridge University Press, 2007.

Cleveland, Ana D., and Donald B. Cleveland. *Introduction to Indexing and Abstracting*. 4th ed. United Kingdom: ABC-CLIO, 2013.

Fetters, Linda K. *Handbook of Indexing Techniques: A Guide for Beginning Indexers*. 5th ed. Medford, NJ: Information Today, 2013.

Lancaster, F. W. *Indexing and Abstracting in Theory and Practice*. Champaign, IL: University of Illinois Press, 2003.

Leise, Fred, Kate Mertes, and Nan Badgett. *Indexing for Editors and Authors*. Medford, NJ: Information Today, 2008.

Perlman, Janet. *Indexing Tactics & Tidbits: An A to Z Guide*. Medford, NJ: Information Today, 2016.

Scriptures & Ancient Sources: Indexing Best Practices. 2nd ed. Austin, Texas: Potomac Indexing, 2020.

Society of Biblical Literature. *The SBL Handbook of Style*. 2nd ed. Atlanta: SBL Press, 2014.

Stauber, Do Mi. *Facing the Text: Content and Structure in Book Indexing*. Eugene, OR: Cedar Row Press, 2004.

Towery, Margie. *Ten Characteristics of Quality Indexes*. Medford, NJ: Information Today, 2016.

Wellisch, Hans. *Indexing from A to Z*. 2nd ed. New York: H. W. Wilson, 1995.

Younging, Gregory. *Elements of Indigenous Style: A Guide for Writing By and About Indigenous Peoples*. Edmonton, Alberta: Brush Education, 2018.

A.3 Taxonomy and thesaurus resources

Aitchison, Jean, Alan Gilchrist, and David Bawden. *Thesaurus Construction and Use*. 4th ed. London: Aslib IMI, 2000.

Hedden, Heather. *The Accidental Taxonomist*. 2nd ed. Medford, NJ: Information Today, 2016.

A.4 Vocabularies and thesauri by subject area

Interoperability and uniformity are essential elements of automated indexing. Indexers should use vocabularies that are accepted standards in their fields and meet [NISO guidelines for controlled vocabularies](#), such as the following:

A.4.1 Biomedicine

[Medical Subject Headings \(MeSH\)](#) ([United States National Library of Medicine](#), NLM), available in a linked data format ([RDF](#)) that can be [downloaded](#), also accessible for queries as a [SPARQL API](#)

[Unified Medical Language System \(UMLS\)](#) (NLM)

A.4.2 Life Sciences

[CAB Thesaurus](#) (Centre for Agriculture and Bioscience International)

A.4.3 Mathematics

[Mathscinet](#) database of reviews, abstracts and bibliographic information classified according to the [Mathematics Subject Classification](#)

A.4.4 Physical Sciences and Engineering

[IEEE Thesaurus](#)

[GBA Thesaurus of Geosciences](#), bilingual in German and English as used in geoscientific text publications and geological maps of the Geological Survey of Austria

[NASA Thesaurus](#) (browsable PDF file), authorized NASA subject terms for the [NASA Technical Reports Server \(NTRS\)](#)

[Optics Classification and Indexing Scheme](#) (PDF) (Optics Society)

[Physics Subject Headings](#) physics classification scheme developed by the American Physical Society

[Transportation Research Thesaurus](#) (National Academies of Sciences, Engineering, and Medicine)

A.4.5 Social Sciences

[AARP Thesaurus of Aging Terminology](#) (PDF) (American Association of Retired Persons, 2005)

[Ethnographic Thesaurus](#) (American Folklore Society/Library of Congress)

[Forum on Information Standards in Heritage Thesauri \(FISH\)](#) (browse only)

A.4.6 Economics

American Economic Association (AEA) *JEL Classification System and EconLit Subject Descriptors*. See the [JEL Codes Guide](#).

A.4.7 Psychology

[PsycINFO](#) (American Psychological Association), uses [APA Thesaurus](#) and [PsycINFO classification codes](#) for indexing citations and abstracts. [Record metadata](#) includes PsycINFO unique identifier, ISSN or ISBN number, DOI, PMID, and MeSH unique identifier.

A.4.8 Education

[ERIC \(Educational Resources Information Center\) Thesaurus](#) (Institute of Education Sciences, IES, U.S. Department of Education)

[Schools Online Thesaurus \(ScOT\)](#) (Education Services Australia)

A.4.9 Arts and Humanities

[Art and Architecture Thesaurus \(AAT\)](#), [Cultural Objects Name Authority \(CONA\)](#), and [Getty Thesaurus of Geographic Names \(TGN\)](#) (Getty Research Institute). All allow open use and sharing through [Linked Open Data](#).

[Rare Books and Manuscripts Section \(RBMS\) Controlled Vocabularies](#) (Association of College and Research Libraries division, American Library Association)

[Union List of Artist Names \(ULAN\)](#) (Library of Congress)

A.4.10 United States Government Agencies

[Library of Congress Authorities](#)

[Library of Congress Legislative Indexing Vocabulary \(LIV\)](#)

[Library of Congress Thesaurus for Graphic Materials I](#)

[NAICS \(North American Industry Classification System\)](#)

[USDA National Agricultural Library Agriculture Thesaurus](#)

[USGS Biocomplexity Thesaurus](#)

A.4.11 International Agencies and Organizations

[European Thesaurus on International Relations and Area Studies](#)

[United Nations Bibliographic Information System \(UNBIS\) Thesaurus](#)

[UNESCO Thesaurus](#)

[Virtual International Authority File \(VIAF\)](#)

[World Bank Thesaurus](#)

A.5 Metadata standards

For machine readability, sources must follow [FAIR metadata standards](#) (Findable, Accessible, Interoperable, Reusable).

Bibliography

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Reports

National Information Standards Organization. *NISO TR02-1997, Guidelines for Indexes and Related Information Retrieval Devices*. Bethesda: NISO Press, 1997.

National Information Standards Organization. *NISO TR03-1999, Guidelines for Alphabetical Arrangement and Sorting of Numerals and Other Symbols*. Bethesda: NISO Press, 1999.

Standards

American National Standards Institute and National Information Standards Organization. *ANSI/NISO Z39.85-2012, The Dublin Core Metadata Element Set*. Baltimore: NISO, 2013.

International Standardization Organization. *ISO 690:2010 Information and documentation - Guidelines for bibliographic references and citations to information resources*. Geneva: ISO, 2010.

International Standardization Organization. *ISO 999:1996 Information and documentation - Guidelines for the content, organization, and presentation of indexes*. Geneva: ISO, 1996. Last confirmed 2015.

International Standardization Organization. *ISO 12083:1994 Information and documentation — Electronic manuscript preparation and markup*. Geneva: ISO, 1994. Last confirmed 2016.

International Standardization Organization. *ISO 15836-1:2017 Information and documentation — The Dublin Core metadata element set — Part 1: Core elements*. Geneva: ISO, 2017.

International Standardization Organization. *ISO 15836-2:2019 Information and documentation — The Dublin Core metadata element set — Part 2: DCMI Properties and classes*. Geneva: ISO, 2019.

Other resources

ALA-LC Romanization Tables: Transliteration Schemes for Non-Roman Scripts. Washington: Cataloging Distribution Service, Library of Congress, 1997.
Available at: <https://lccn.loc.gov/97012740>.

American Library Association, RTSD Filing Committee. *ALA Filing Rules*. Chicago: ALA Editions, 1980.

The Chicago Manual of Style. 17th ed. Chicago: University of Chicago Press, 2017.

Rather, John Carson, and Susan C. Biebel. *Library of Congress Filing Rules*. Washington: Library of Congress, 1980.

Rehabilitation Act of 1973, Section 508, 29 U.S.C. § 794(d). 1998. Available at: <https://www.section508.gov/manage/laws-and-policies>.

Resource Description and Access (RDA). Chicago: American Library Association, 2015.

Web Content Accessibility Guidelines (WCAG). World Wide Web Consortium (W3C), 2018. Available at: <https://www.w3.org/WAI/standards-guidelines/wcag/>.

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