

INS 216
CLASSIFICATION I
(Theory 3 Units)

The aim of the course

- The course is designed to provide an in-depth knowledge of the theory of library classification and provide hands on practice on classifying information materials in different subject areas

Learning Outcomes

At the end of this course, learners should be able to:

- Identify major issues that constitute the basis of bibliographic classification
 - Describe the concepts and principles of subject determination and the process of classifying an information material
- Analyze information resources for subject content and assign classification notation using a Classification Scheme
- Develop and evaluate a classification scheme in any area of study

Course Outline

- 1. Introduction to classification of information materials.**
- 2. Characteristics of subject.**
- 3. Subject analysis for classification.**
- 4. Core concepts of classification and their application.**
- 5. Typology of classification schemes.**
- 6. Approaches to classification schemes:**
 - i. enumerative;**
 - ii. hierarchical**
 - iii. faceted approaches.**
- 7. General Classification schemes:**
 - i. Dewey Decimal Classification;**
 - ii. Library of Congress Classification Scheme;**
 - iii. Universal Decimal Classification Scheme.**
 - iv. Special classification schemes:**
 - **patent classification;**
 - **BLIS.**
- 8. Classifying web based resources.**
- 9. Management and evaluation of classification schemes**

Assessment

- Continuous Assessment Tests (CATs): 40%
- End of Semester Written Examination: 60%

Introduction

1. Classification of information materials

- Library classification is an aspect of library and information science
- It is distinct from scientific classification in that it has as its goal to provide a useful ordering of documents rather than a theoretical organization of knowledge
- Although it has the practical purpose of creating a physical ordering of documents, it does generally attempt to adhere to accepted scientific knowledge.^[1]
- Library Classification helps to accommodate all the newly published literature in an already created order of arrangement in a filiatory sequence
- Library classification can be defined as the arrangement of books on shelves, or description of them, in the manner which is most useful to those who read with the ultimate aim of grouping similar things together

1. classification of information materials ...

- Library classification is meant to achieve these four purposes like:
 - i. ordering the fields of knowledge in a systematic way
 - ii. bring related items together in the most helpful sequence
 - iii. provide orderly access on the shelf
 - iv. provide a location for an item on the shelf

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- Library classification is distinct from the application of subject headings in that classification organizes knowledge into a systematic order, while subject headings provide access to intellectual materials through vocabulary terms that may or may not be organized as a knowledge system
- The characteristics that a bibliographic classification demands for the sake of reaching these purposes are: a useful sequence of subjects at all levels, a concise memorable notation, and a host of techniques and devices of number synthesis

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Definitions and Concepts

- The term ‘Classification’ is a derivation from the Latin word “Classis” which connotes ‘Grouping’
- Classification is a procedure of grouping similar items and objects and is essential in formulating groups that is known as classifying which results in Classification
- This process helps the user to arrange, organize and make a logical sense of articles which also assists the user to locate them in an easy manner
- Classification is the ability to distinguish objects through their similarities and dissimilarities which is distinct in their identities for human beings

Definitions

- Library Classification is related with the arrangement of documents in the library in a manner that the readers are served in the best possible way. –
- It requires a detailed scheme of classification in which knowledge is divided into a broader perspective, which is again subdivided into subjects or main classes
- Each subject and its divisions along with their specific aspects are represented by a system of numbers called Notation
- It is the notation that helps in the arrangement of documents on the shelf
- Library classification deals with the organizing of library materials, belongs to a systematic group.

Definitions

Jens Martensson

- Library Classification can also be considered to be a process of putting books and other reading material on a subject in a logical sequence on the shelf, which could be of immense help to the users. –
- It requires an adept thorough study and practice in the technique of classification of books, knowledge of the details and handling of the scheme of classification.
- Library Classification is one of the most important steps in the organization of the libraries and has been aptly called the “Foundation of Librarianship

Definitions

- According Berwick Sayers: library classification is “the arrangement of books on shelves or descriptions of them, in the manner which is most useful to those who read.”
- Dr. S R Ranganathan: library classification is meant to be “the translation of the name of the subject of a book into a preferred artificial language of ordinal numbers, and the individualization of the several books dealing with the same specific subject by means of further set of ordinal numbers which represent some features of the book other than their thought content

2. History of classification

- Library classifications were preceded by classifications used by bibliographers such as Conrad Gessner. The earliest library classification schemes organized books in broad subject categories. The earliest known library classification scheme is the Pinakes by Callimachus, a scholar at the Library of Alexandria during the third century BC. During the Renaissance and Reformation era, "Libraries were organized according to the whims or knowledge of individuals in charge."
- This changed the format in which various materials were classified. Some collections were classified by language and others by how they were printed.
- After the printing revolution in the sixteenth century, the increase in available printed materials made such broad classification unworkable, and more granular classifications for library materials had to be developed in the nineteenth century.

2. History of classification...

- In 1627 Gabriel Naudé published a book called Advice on Establishing a Library. At the time, he was working in the private library of President Henri de Mesmes.
- Mesmes had around 8,000 printed books and many more Greek, Latin and French written manuscripts. Although it was a private library, scholars with references could access it.
- The purpose of Advice on Establishing a Library was to identify rules for private book collectors to organize their collections in a more orderly way to increase the collection's usefulness and beauty.
- Naudé developed a classification system based on seven different classes: theology, medicine, jurisprudence, history, philosophy, mathematics and the humanities.

2. History of classification...

- These seven classes would later be increased to twelve
- Advice on Establishing a Library was about a private library, but within the same book, Naudé encouraged the idea of public libraries open to all people regardless of their ability to pay for access to the collection.
- One of the most famous libraries that Naudé helped improve was the Bibliothèque Mazarine in Paris. Naudé spent ten years there as a librarian. Because of Naudé's strong belief in free access to libraries to all people, the Bibliothèque Mazarine became the first public library in France around 1644.

2. History of classification...

- Although libraries created order within their collections from as early as the fifth century BC, the Paris Bookseller's classification, developed in 1842 by Jacques Charles Brunet, is generally seen as the first of the modern book classifications.
- Brunet provided five major classes: theology, jurisprudence, sciences and arts, belles-lettres, and history Classification can now be seen as a provider of subject access to information in a networked environment.[13]

3. Characteristics of subject

- In library and information science documents (such as books, articles and pictures) are classified and searched by subject – as well as by other attributes such as author, genre and document type.
- This makes "subject" a fundamental term in this field. Library and information specialists assign subject labels to documents to make them findable.
- There are many ways to do this and in general there is not always consensus about which subject should be assigned to a given document.
- To optimize subject indexing and searching, we need to have a deeper understanding of what a subject is.
- The question: "what is to be understood by the statement 'document A belongs to subject category X'?" has been debated in the field for more than 100 years

Definition of Subject

- A system, which has an explicit theoretical foundation in Ranganathan's Colon Classification
- Ranganathan provided an explicit definition of the concept of "subject"
- Subject – an organized body of ideas, whose extension and intention are likely to fall coherently within the field of interests and comfortably within the intellectual competence and the field of inevitable specialization of a normal person.
- A related definition is given by one of Ranganathan's students:
- A subject is an organized and systematized body of ideas. It may consist of one idea or a combination of several ideas
- Ranganathan's definition of "subject" is strongly influenced by his Colon Classification system. The colon system is based on the combination of single elements from facets to subject designation. This is the reason why the combined nature of subjects are emphasized so strongly.

The characteristics of a good classification

1. Comprehensiveness: Cover all possible subject areas
2. Clarity: should not be confusing to the user
3. Homogeneity: Must be consistent throughout
4. Suitability: appropriate to the classification job at hand
5. Stability: Must not keep changing within short periods
6. Elastic: Must be able to expand to accommodate new subject areas

Classification overview

- “Classification is everywhere.
- We classify birds and animals, languages and ethnic groups, stars, volcanoes, minerals and clouds, wine and blood, and colours and roses...
- “It is natural to the human mind to classify, and essential if we want to make sense of the world, which is full of unique creatures and objects.” from Essential Classification, by Vanda Broughton

What is classification?

Classification in general

- The placing of subjects into categories
- Provides a system for organizing, categorizing knowledge
- Roots of current classification systems go back to Aristotle's classical theory of categories

Classification of books

• If you were organizing a collection of books, you might you arrange them by: ?

- i. Author's last name ?
- ii. Title ?
- iii. Subject ?
- iv. Size ?
- v. Color ?
- vi. paperback ?
- vii. Publisher
- viii. Read and unread books ?
- ix. Order of acquisition ?
- x. Provenance ?
- xi. Sentimental value ?
- xii. According to a classification system such as LCC or DDC

Classification in libraries

- Use of a systematic scheme for the arrangement of books and other materials

Purpose:

- Bring related items together in a useful sequence from the general to the specific
- Provide a shelving location that patrons use to locate materials
- Enable patrons to browse collections on a topic, either in person or online

Early library classification systems

- Various types of arrangement: by broad subject, author, title, order of acquisition, size ?
- Often used “fixed location” – book assigned a spot on a particular shelf ?
- Starting in 16th century, librarians devised many classification schemes ?
 - Jefferson’s system (based on Francis Bacon’s outline of knowledge) most well known ?
 - None really caught on till end of 19th century 1

Some early developers & systems

- Francis Bacon 1605, published his outline of knowledge
- Jean Le Rond d'Alembert 1751, published ideas on how Diderot's Encyclopédie might be arranged
- Thomas Jefferson System based on Bacon and d'Alembert
- Melvil Dewey Dewey Decimal Classification
- Charles Ammi Cutter Expansive Classification

Basic terminology

Classify: To categorize, in order to arrange books on the shelves according to subject, using a classification system

Classification schedules: The books (or files) that contain class numbers

Notation: The system of symbols used to represent the classes in a classification system

General process for classification

1. Analyze the subject content of the work ?
2. Summarize the primary subject focus of the work as a whole ?
3. Possible next step: Formulate subject headings that express what the work is about
4. Go to the classification schedules and determine where the item should be placed within that scheme ?
5. Assign the class number ?
6. As appropriate for the scheme, add additional elements to the class number

Types of classification schemes

1. **Hierarchical** : Subjects are divided hierarchically, from general to specific . Most classification schemes are hierarchical, creating categories from general to specific. *[Colon Classification is an exception]*
2. **Enumerative**: All aspects of a subject are explicitly provided for in the schedules. Enumerative classification systems (such as LCC) often include lengthy lists of compound and complex subjects. Terms for aspects such as place, period, and form appear repeatedly throughout the schedules.

Types of classification schemes

3. **Analytico-synthetic:** Commonly occurring concepts (place, form, etc.) are listed once and notation is used to build or synthesize numbers. Dewey Decimal Classification is one example of an analytico-synthetic scheme.
4. **Faceted:** Does not assign fixed numbers to subjects, but combines facets of a subject in a composite number. Colon Classification is an example of a faceted scheme. Many people are hearing about faceted displays in new interfaces to library catalogs – these typically make use of subject subdivisions to allow users to narrow a search by form, geographic treatment, or chronological period. Faceted classification is quite different.

[NOTE: a classification scheme can fit more than one of these types – for example, LCC is hierarchical and very enumerative. DDC is hierarchical and enumerative (though much less so than LCC) and has analytico-synthetic features.]

Example of faceted classification

1. Personality=Subject Name = History = *H*
2. Matter = Modern = *C*
3. Energy = Process = Reminiscing = *R*
4. Space = Africa = *A*
5. Time = Twentieth Century = *T*
6. Form = Books = *B*

Abbreviated as PMEST-F

Example of classification of the following title using
faceted scheme:

*Book on “Reminiscing Classical History of Africa in the
Twentieth Century”*

Notation = H C R A T B

Selected classification schemes

- **Most** common in U.S. libraries: ?
 - Dewey Decimal Classification (DDC) ?
 - Library of Congress Classification (LCC) ?
- **Superintendent** of Documents (SuDocs) ?
 - National Library of Medicine (NLM) ?
- More common outside U.S.: ?
 - Universal Decimal Classification (UDC) ?
 - Colon Classification (CC)

Considerations in choosing a classification scheme

1. Focus of the collection to be classified
 - General or specialized?
2. Maintenance of the schedules
 - Revised to accommodate new subjects?
 - Do revisions require reclassification?
3. Cost
 - Availability of catalog copy using the scheme
 - Cost of the schedules, print and/or electronic
4. Personnel issues
 - Professional/paraprofessional staff, students, volunteers?

4. Subject analysis for classification

Subject classification

- The organization of materials into categories according to a scheme that identifies, distinguishes, and relates the concepts or topics of the materials
- Subject analysis is the part of cataloging that deals with determining what the intellectual content of an item is "about."
- The cataloger must observe and translate an item's characteristics of discipline, topic, form, etc., into the conceptual frame of the system.
- The subject analyzer must usually determine first the subject, then the form of an item, except in literature where form might be of more importance.
- An item entitled *History of Mathematics* is about mathematics, not about history. Similarly, *Nature in Italian Art, a Study of Landscape Backgrounds from Giotto to Tintoretto* is about landscape painting, not about Italian art history.
- In some cases, however, the subject is elusive and the cataloger must rely on judgment. The problem has been elaborated upon by Sayers:

Subject classification

- If the book on Scotland is not mainly geographic and historical, but consists of descriptive and narrative chapters together with a melange of literary and scientific observations and reflections on the national traits and institutions, also considerable social philosophy in the last chapters, the judgment is indeed complex and the decisions may be uncertain.
- Much has been written on subject analysis and classification theory. The subject has been pursued much more vigorously in Great Britain and in countries that have been under British influence in the last century than has been the case in the United States.
- A useful text on the subject of determining the "aboutness" of an item has been written by A. G. Brown.³ Once this "aboutness" has been determined, the cataloger then usually chooses a classification notation from the classification scheme used by the library and one or more verbal subject terms from the subject heading list used by the library.
- The classification notation is usually used as the basis for a call number, which will determine the position of the item in the storage area

Subject analysis principles

- What are the basic principles of subject analysis?
- How do you determine what an item is about?
- Why do controlled vocabularies help in providing subject access?

SUBJECT ANALYSIS

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CLASSIFIED VERSUS ALPHABETIC APPROACH TO INFORMATION

- During cataloging, the cataloger must take into account the dual manifestations of the items to be added to the collection.
- Items are both intellectual and physical entities.
- In descriptive cataloging the physical description addresses the physical entity while access points are constructed to allow for approach to the intellectual work.
- In subject analysis, classifiers traditionally choose only one classification, which will place in one location on the shelves all copies of a given item.

CLASSIFIED VERSUS ALPHABETIC APPROACH TO INFORMATION

- On the other hand, catalogers may choose more than one subject term or classification under which to represent an item in a catalog or index.
- Classifiers strive for the optimum location in view of the content of the item, the accepted classification schedule, and the needs of the clientele.
- Such decisions are not always easy to make.
- For instance, the same historical treatise might go equally well into political or economic history, or perhaps under social history or biography.
- In the choice of subjects to be represented in the catalog or index for this hypothetical treatise, all the aspects can be brought out through choice of multiple access points.

CLASSIFIED VERSUS ALPHABETIC APPROACH TO INFORMATION

- Inquirers who want information on a certain subject will approach the catalog with questions formulated in their own words.
- These terms must be translated into the predetermined access categories of the catalog.
- Such communication between inquirer and catalog, with the possible intervention of a librarian, must take place regardless of the type of catalog consulted or the arrangement of its entries.

THREE SYSTEMS OF ARRANGING ENTRIES IN A LIBRARY/ CATALOG

Classified Arrangement

- The classified catalog has the longest history of all.
- Many American libraries used this form before they changed to the more popular dictionary form.
- It is based upon a special system of classification. For example, the shelflist - a record of the holdings of a library arranged by classification number, is a classified catalog of a kind.
- But in a true classified catalog, a bibliographic record may be entered under as many classification numbers as apply to its contents, not under just one number as in a shelflist.
- In addition, the shelflist lacks an alphabetical subject index, which a true classified catalog has.
- The major advantage of a classified catalog is that because it uses symbols or numbers it can keep up with changing terminology and thus be up to date.

Classified Arrangement

- Its greatest disadvantage is that it is constructed on a particular classification scheme (even though this was an advantage as noted above).
- Since many patrons are not familiar with classification numbers, they would need special assistance when consulting the classified catalog.
- However, some fields-particularly the sciences-can make good use of such a catalog, inasmuch as science changes so rapidly, since the classified catalog is flexible and can be easily updated
- Classified catalogs are also of value in locations where the patrons may speak one of two or more languages. In such a case, an alphabetical subject index may be made in each language.
- In Quebec, for example, where both English and French are spoken, there would be one major classified catalog, with French and English indexes. Classified catalogs are actually only the subject part of a divided catalog.

Advantages of a classified catalog

- A controlled order of academic disciplines, as well as of popular topical sequences. This order fosters direct, efficient searching at either catalog or shelf for those users familiar with the classification scheme. A reader interested in psychology, for instance, can initially consult and study a single section of the catalog with assurance of its relevance.
- Extensive opportunities for in-depth searching. Based on logical relationships rather than linguistic associations, this arrangement not only offers a better comprehension of subject matter, but also directly stimulates the learning experience. It expands the frequently discussed values of browsing in an open-shelf library.
- Directly related is the opportunity to search in both directions, from general to specific as well as from specific to general.
- Notation objectively signifies topics and categories. They reduce to a minimum the prejudices often associated with linguistic terms. The notation further allows one class number to be used for shelving, while others may designate supplementary entries.

Disadvantages of a classified catalog

- Much of our cultural heritage, as recorded in documentary collections, cannot be satisfactorily systematized.
- The most effective classed catalogs are in special libraries, mostly for scientific or technological disciplines. These areas are the most susceptible to rigid logical systematization.
- Traditional academic disciplines tend to crumble nowadays in the wake of inter- and multi-disciplinary studies. Systems of arrangement within any subject field can be made obsolete by the advancing frontiers of knowledge.
- Systematic arrangements are almost never such ready vehicles of common knowledge as is the alphabet.

Disadvantages of a classified catalog

- The alphabetic index accompanying a classified catalog usually gives access only to spans and categories of classification, unlike an alphabetical catalog, which identifies specific titles.
- It points the user to both the classified catalog, where all the library's holdings are recorded, and the shelves, where actual documents can be examined, but where items may be inadvertently missing, being at the moment in use elsewhere.
- It may be a published index to a particular classification scheme, e.g., the "relative index" of the Dewey Decimal Classification.
- It may be a list of separately published subject headings that are locally associated with class numbers from a given system, e.g., Library of Congress Subject Headings, which carries many LC classification numbers, although it is not specifically designed to be a classification index.
- Or it may be a specially generated index, such as a chain index, based on the extracted vocabulary of the classification used
- The major advantage of a chain index in this context is that specific rules for controlling the index vocabulary may be based on the classification scheme being used

Alphabetical (Dictionary) Arrangement

- In the dictionary arrangement of entries, widely used in American libraries, all the entries-main, added, and subject-are combined, word by word, into one alphabetical file
- This arrangement is said to be simple in the sense that only one file needs be consulted
- As the library grows, however, the dictionary arrangement becomes cumbersome and complex because all entries are interfiled
- The problem becomes partly one of filing (are books by Charles Dickens, for example, filed before those about him?) and partly one of dispersion
- The subject of "industrial relations" has many aspects
- How can all these aspects be located if they are entered under headings from "A" for "arbitration" to "W" for "wages"? Two primary justifications are offered that most patrons seek material on one aspect of a subject rather than upon the broad subject itself, and patrons are provided with ample see and see also references, which direct them to other aspects of their subjects

Advantages of Alphabetical (Dictionary) Arrangement

Arrangement

- **Simplicity and popularity.** The apparent simplicity of alphabetical filing can be deceptive, however. Filing problems inevitably arise, especially in dictionary catalogs, where interfiling personal and corporate authors, titles, subjects, cross references, etc., becomes something like the old dilemma of adding apples and oranges to pears.
- **Direct access to bibliographic data and holdings.** In spite of its filing pitfalls, consolidated, single-strike catalog is many ways more efficient. The "double look-up," and even more extended serial searching, are reduced to minimum.
- **Greater freedom introducing new groupings.** Descriptive subject headings need not bear the same logical relationship to one another as do classes in systematic arrangement.

Disadvantages of Alphabetical (Dictionary) Arrangement

- i. **Fragmentation of subject matter.** Most published subject heading lists for libraries indulge "classing" through the use of inversions, subdivisions, and the like.
- ii. **Worsening of semantic problems.** In the absence of short, specific words for many subject concepts, awkward compound and prepositional phrase headings soon appear, to complicate the filing and confuse the user.
- iii. **Inherent weakness in the conceptual structure of subject headings.** With no systematic framework to regulate its growth, an alphabetic subject list inevitably stumbles over the problems of the plurality and specificity of its terms

Divided Arrangement

- In the 1930s the realization that dictionary catalogs were becoming more and more complex led to a modification of the dictionary arrangement
- The result was the divided catalog, which, in its most common form, is in reality two catalogs: one for main and added entries other than subject; the other for subject entries only.

Divided Arrangement

- There are a few libraries that use other types of divided catalogs, such as the three-way divided catalog consisting of separate sections for author, title, and subject entries
- Although this system may simplify the filing of cards, it can be even more confusing for a patron than the two-way divided catalog
- In this arrangement, entries for books by Dickens will be filed under Dickens' name in the author catalog, the titles of his individual novels will be filed in the title catalog, and books about Dickens will be filed in the subject catalog.
- Another type of two-way divided catalog is a name/title catalog and a topical subject catalog
- In such a divided catalog, names and titles that are used even as subject headings are filed in the name/title section
- This type of divided catalog allows all the material by and about an author or a title to be filed together
- Thus, to continue our previous example, books by and books about Dickens would be filed together in the same catalog
- This system is potentially less confusing to the patron

Advantages/Disadvantages of Divided Arrangement

Advantages

- i. permits a simpler filing scheme than does the dictionary catalog.
- ii. easier to consult, although the problem of scattered subjects still exists

Disadvantages

- i. Scattered subjects
- ii. patron must determine whether an author or title entry or a subject entry is wanted before knowing which part of the catalog must be checked.
- iii. Books about Dickens and books by Dickens are not filed together in the catalog. Patrons will need some guidance and education in this matter.

Classification of Library Materials

- Collections in libraries of any appreciable size are arranged according to some system, and the arrangement is generally referred to as classification
- Classification provides formal, orderly access to the shelves.
- No matter what scheme is chosen, or how large the library, the purpose of classification is to bring related items together in a helpful sequence from the general to the specific
- Ease of access is especially important if the collection is heterogeneous.
- It is convenient and desirable-particularly in the open-shelf collections to which many libraries in the United States are committed-to have, for example, all histories of the United States together, or all books on symbolic logic, or all symphony scores, so that the patron, who may or may not have one title in mind, can find related works in one location

Classification of Library Materials

- The ultimate aim of any classification system is to lead the patron to the items required, either through direct search of the shelves (open stacks), or through the help of a library attendant whose duty it is to retrieve the materials on demand (closed stacks)
- Each system has its virtues. Open stacks encourage browsing, and thus stimulate intellectual awareness and foster serendipity
- They work best with a logical, fairly comprehensible system of classification that encourages the patron's self-reliance in seeking items on a particular subject or its specific aspects
- Closed stacks lessen the chances that materials will be mishandled, misplaced, or stolen, but they force the patron to limit his or her own searching to the catalog (and perhaps the shelflist), and to wait for a library employee to bring items specifically requested

Classification of Library Materials

- Closed stacks still have a use in a storage library situation where items may not be shelved in subject groups at all, but ranged in more or less fixed location by size, with consecutive numbers assigned as addresses
- "Fixed location" means that each item has one specific, fixed position on the shelf in the library as was the case in many libraries prior to the mid-nineteenth century
- "Relative location" is a fluid, constantly changing arrangement of items according to their relationship to one another and resulting from the addition of new materials or the removal of old, weeded, or lost materials
- In this system items may be moved from shelf to shelf without altering or disturbing their classified sequence.

Classification of Library Materials

- No matter what the classification scheme or the type of shelving, the library catalog, as primary source of reference, must be complete and current
- It provides information about particular items or types of items through various access points-usually by author(s) or other names associated with an item, by any title given to a work, and by subject headings. Along with information found via these access points is usually a call number (i.e., the shelf address where an item may be found)
- One element of the call number is usually the classification.

LIBRARY CLASSIFICATION

- Organized documentary collections have existed since early civilizations learned to convert their spoken languages to written form
- Even before the codex book appeared, early record depositories received some form of utilitarian arrangement. Groupings were made by title, by broad subject, by chronology, by author, by order of acquisition, by size, etc
- One of the earliest catalogs was the one known as Pinakes (Greek for "tablets") compiled for the great Alexandrian library by the poet Callimachus in the third century B.C.
- Though this catalog did not survive, it is known that it arranged the entries in at least ten (and possibly more) main classes, subdivided alphabetically by author

LIBRARY CLASSIFICATION

- In the Middle East and in the Byzantine Empire it served as a model for other catalogs and bibliographies until the early Middle Ages
- The monastery libraries of that time in Western Europe were mostly small and had almost no need for classification, but the university libraries of the late Middle Ages arranged books corresponding to the Trivium and Quadrivium, the traditional seven subject fields taught
- Within the classes, books had fixed locations on the shelves
- Beginning in the sixteenth century, librarians devised many different classification schemes for the arrangement of books, but fixed locations predominated in most European and early American libraries until the mid-nineteenth century
- The most substantive developments in the arrangement of library collections were concurrent with the rapid growth of libraries and their use during the nineteenth century

LIBRARY CLASSIFICATION

- At that time librarians felt a definite need for better methods of arrangement, so that the content of their holdings would be available, and more apparent, to the user.
- The history of modern library classification corresponds to the various attempts to adapt and modify existing philosophical systems of knowledge to the arrangement of materials and to users' needs
- One of the best known early American classifiers was Thomas Jefferson, third President of the United States
- He adapted certain elements of Francis Bacon's outline of knowledge, University of Virginia and the reorganization of the College of William and Mary.
- Bacon's system classified materials as functions of the three basic faculties: history (natural, civil, literary, ecclesiastical) as the function of Bacon's system classified materials as functions of the three basic fables, and the like, as that of imagination

LIBRARY CLASSIFICATION

- Its influence was widespread: memory; philosophy (including theology) as that of reason; and poetry,
- Jean Le Rond d'Alembert used the Baconian system for the arrangement of the famous *Encyclopédie ou dictionnaire raisonné des sciences des arts et des métiers* of the French Enlightenment (1751-1765)
- Jefferson's classification was based on that modification as was the Catalogue of Benjamin Franklin's Library Company of Philadelphia (1789)
- Three years before Jefferson's Catalogue of the Library of the United States was installed at the Library of Congress, a variant of the Philadelphia scheme was used to produce the 1812 Catalogue of the Library of Congress
- Among other early followers of the Baconian system were Thaddeus Mason Harris, librarian at Harvard (1791-1793); Edward William Johnson, librarian of the College of South Carolina and later of the St. Louis Mercantile Library; and, finally, Johnson's successor, William Torrey Harris, a Hegelian who inverted the Baconian system, creating an independent American classification

LIBRARY CLASSIFICATION

- At the same time, various adaptations of the Brunet utilitarian classification scheme existed in several American libraries as a direct result of its use to arrange parts of the British Museum and the Bibliothèque Nationale.
- In 1876 Melvil Dewey devised his famous Dewey Decimal Classification (DDC), based in large part on W. T. Harris's system, with a decimal notation
- Soon DDC was spreading its influence throughout the world
- At about the same time, Charles A. Cutter began his work at the Boston Athenaeum
- Cutter sought to achieve, not a classification of knowledge, but a practical, useful method for arranging library materials
- Nevertheless, his Expansive Classification shows the definite influence of Spencer and Comte, especially in the development of its subordinate classes.
- At the beginning of the present century, when the Library of Congress had grown from several thousand books to nearly one million, it was apparent that the library would need a new classification system

LIBRARY CLASSIFICATION

- After much deliberation, J. C. M. Hanson and Charles Martel decided to design an independent system governed by the actual content of the collection (literary warrant)
- This form of classification differs from a purely philosophical approach in that it is based on the books as entities
- For this reason it is enumerative. An enumerative classification is one that attempts to assign designations for (to enumerate) all the single and composite subject concepts required in the system
- Hierarchical classification is based on the assumption that the process of subdivision and collocation must exhibit as much as possible the "natural" organization of the subject, proceeding from classes to divisions to subdivisions and following, at least in part, the rules of division as set down by "logic." Synthetic classifications confine their explicit lists of designations to single, unsubdivided concepts, giving the local classifier generalized rules with which to construct headings for composite subjects

LIBRARY CLASSIFICATION

- In summary, established philosophical systems of knowledge, with various modifications, underlie most traditional library classifications
- The frequent distinction between classification of knowledge and classification of materials seems to have confused the thinking of many librarians
- The two processes have important interactions. Even cursory examination of any library classification, including those purporting to organize "the items themselves," reveals an intellectual concept of the item as an expression of Traditional Classification Schemes certain ideas in one of many available media
- Philosophical classification organizes knowledge itself-registering, evaluating, and classifying thoughts, ideas, and concepts for the universal purpose of adequately representing the field of human learning
- Library classification arranges the records which express and preserve knowledge, making adjustments as needed because of the physical format of such records.

TRADITIONAL CLASSIFICATION SCHEMES

- Most traditional classification systems are basically enumerative. By contrast, the more recent schemes tend to be synthetic. But it is well to remember that materials on shelves or in files are arranged in a single order
- Most items can be requested by author, title, subject, or form, but they can be organized by only one of these at a time
- Linear arrangement imposes certain limitations on the classifier
- Over the years efforts to meet such limitations have resulted in techniques or features which are characteristic of nearly every worthwhile library classification. One such feature is a generalia or general works class, which accommodates items that are too broad in scope for inclusion in any single class

TRADITIONAL CLASSIFICATION SCHEMES

- Such works usually overlap several traditional disciplines or "classes," e.g., encyclopedias, dictionaries, general periodicals, etc.
- In addition, form classes organize materials according to their form of presentation rather than to their subject content
- Literary works, e.g., poetry, drama, fiction, etc., are the most obvious, but books of etchings, photographs, musical scores, etc. also fall into this group.
- Form divisions group items dealing with different subjects in the same mode of presentation
- The "standard subdivisions" of the Dewey Decimal Classification, for instance, can be used to subdivide most disciplines or topics

TRADITIONAL CLASSIFICATION SCHEMES

- It should be recognized, however, that some are "modes of treatment" rather than "form divisions." So, for example, "compends," "outlines," "dictionaries," or "periodicals" belonging to a subject do embody physical forms, with study and teaching or research in a subject, histories, and biographies, Other groups such as philosophical or theoretical treatments, works dealing etc., are classified rather by their "inner form."
- division into a shorthand symbol or code to be used as a shelf or file address A notation translates the meaning of a specific class, division, or sub and a convenient reference to the arrangement and identification of the parts of the system
- It must be simple, brief, and flexible. It may be composed of letters, numerals, arbitrary signs, or a mixture of these

TRADITIONAL CLASSIFICATION

SCHEMES

- In general, there are two basic types of notation
- Pure notation uses one kind of symbol, such as the Roman alphabet or Arabic numerals, consistently and exclusively, or nearly so (although one might question whether a pure letter notation would permit both upper and lower case symbols denoting variations of signification)
- The Dewey Decimal Classification is known for its "pure" notation, but it employs a decimal point as well as the ten digits
- Mixed notation uses two or more kinds of symbols, e.g., a combination of letters and numerals
- Notation plays an important role in any classification scheme, especially with the modern emphasis on relative location
- A notation that serves as a guide to the arrangement of items on the shelf helps to preserve orderly sequence by topic, or form, or whatever the principle of organization may be

TRADITIONAL CLASSIFICATION SCHEMES

• Another feature of the library classification is the index, which provides a means of efficient alphabetical reference to all the terms used in the classification schedules

- Most indexes are relative, in that they not only provide alphabetical references to all terms used in the schedules, but also show the relation of each specific subject to other related subjects or their aspects
- Perhaps the best known of this type is the relative index to the Dewey Decimal Classification, where the disciplinary organization makes it likely that a single topic will be subordinated under more than one class or subclass, according to its different features or characteristics. No doubt a relative index is a useful aid for the beginning student of classification; in the classification process it is important not only to locate specific topics in the index and the schedules, but also to learn how to relate specific items to the rest of the collection. The key to successful classification is realization that library materials are arranged according to specific subjects or forms, but are also arranged in relation to the subject and forms of other materials.

FACETED CLASSIFICATION

- A faceted classification differs from a traditional one in that it does not assign fixed and preconceived slots to subjects in an enumerative sequence, but uses clearly defined, mutually exclusive, and collectively exhaustive aspects, properties, or characteristics of a class or specific subject
- Such aspects, properties, or characteristics are called facets of a class or subject, a term introduced into classification theory and given this new meaning by the Indian librarian and classificationist S. R. Ranganathan and first used in his Colon Classification in the early 1930s
- Though the term was then new to classification, the idea was not (as Ranganathan freely admitted)

FACETED CLASSIFICATION

- It had its roots in Dewey's device of place indication by means of a standard notation (e.g., the United States always being 73) appended to any class notation for a subject by means of digits 09, a device now known as a facet indicator
- Dewey recognized three things:
 - 1) that certain characteristics such as "belonging to a place," "being in the form of a periodical," and some others are general and should be applicable to all subjects so as to express a geographical aspect or a physical form, etc.;
 - 2) that such an appended class notation must be clearly distinguished from the class notation for the main subject to avoid confusion; and
 - 3) that two or more facets, including class notations for different subjects, could be combined to express a complex subject-his "number building device" (e.g., the subject "frost damage to oranges" can be expressed by adding to the class notation 643.31 for oranges the facet indicator 9 and the last two digits taken from the subject "plant injuries: low temperatures" 632.11, to result in 634.31911).
- Most other classification schemes designed after Dewey also provided generally applicable facets for places and time periods, and often also for forms

FACETED CLASSIFICATION

- Even LCC, which is an entirely enumerative scheme, included such facets, although they were specially developed for each class as a part of the enumerative structure and are not uniformly applicable in all classes
- The Universal Decimal Classification expanded Dewey's "standard subdivisions" to about a dozen generally applicable "auxiliaries"
- Finally, the Colon Classification introduced the fully faceted approach by means of synthetic class notations, that is, those constructed entirely from individual facets in a prescribed sequence from the most specific to the most general.
- Originally, Ranganathan postulated five basic facets: personality (that is, the focal or most specific subject), material, energy (that is, any activity, operation, or process), space, and time, known as the "PMEST formula." These basic facets were used to analyze a class or subject and to construct a composite class notation for it

FACETED CLASSIFICATION

- For example, the subject "**the design of metal ploughshares in the 19th century U.S.**" shows all five facets: from the most general to the most specific, 19th century is the time facet; U.S. is the space (or place) facet; design (an activity) is the energy facet; metal is the material facet; and ploughshares, the focal subject, is personality
- It was soon found that these five basic facets were too broad, and that most classes or disciplines needed tailor-made facets; e.g., the field of education can be broken down into facets for educands, educators, teaching methods, subjects taught, level of instruction, etc.; agriculture has the facets crops, operations (sowing, harvesting, etc.), implements and tools, etc.
- Each facet must have a distinctive notation and a facet indicator to show the sequence of facets unambiguously. Thus, in an imaginary faceted scheme the notation of the example given above might be

AfsM3d5U13Z18

FACETED CLASSIFICATION

- where Afs is the class notation for ploughshares (in the tool facet of agriculture), M₃ stands for iron in the material facet, d₅ is the class notation for design, U₁₃ means U.S., and Z₁₈ stands for the 19th century.
- Thus, a faceted structure relieves a classification scheme from the procrustean bed of rigid hierarchical and excessively enumerative subdivision which resulted in the assignment of fixed "pigeonholes" for subjects that happened to be known or were foreseen when a system was designed but often left no room for future developments and made no provision for the expression of complex relationships and their subsequent retrieval
- Enumeration is, has some 50 main classes, largely corresponding to traditional disciplines, and however, not entirely absent from faceted schemes: the Colon Classification an astronomy classification would certainly list the planets of the sun in their order of distance.

FACETED CLASSIFICATION

- While all traditional schemes are essentially based on the strictly hierarchical genus-species relationship for most of their subdivisions, faceted schemes, while recognizing this relationship where warranted, also display others, such as whole-part, operations and processes, agents and tools, substances, physical forms, organizational aspects, and many more, as needed for each specific field or subject
- The design of faceted classification schemes is treated in detail by Vickery and Foskett.⁴
- A faceted class notation such as the one in the example above is not necessarily meant to serve as a shelving device or "call number" (though all or part of it may be so used) but rather for the arrangement of items in bibliographies and access service data bases, where the synthetic notation provides a helpful sequence, and the individual facets can be accessed and retrieved either alone or in any desired combination

FACETED CLASSIFICATION

- This feature is especially important for computerized retrieval, which has been successfully applied to faceted classification, and in online retrieval as a complement to verbal retrieval methods by subject headings or keywords
- The faceted approach is indeed not limited to the construction and assignment of class notations
- It is clearly discernible also in verbal subject indication, e.g., a subject heading such as NEWSPAPERS--UNITED STATES-BIBLIOGRAPHY shows "United States" as the place facet and "bibliography" as the form facet
- The "List of subdivisions" in the Sears List of Subject Headings is actually a list of generally applicable facets (though it is not arranged systematically as it would be in a faceted classification).

FACETED CLASSIFICATION

- Since the 1960s all major classification schemes (with the exception of LC Classification) either have been partially restructured on a faceted basis or display a fully faceted structure
- The influence of faceted classification theory has been most conspicuous in DDC, which now offers facets not only for its traditional "standard subdivisions" and areas, but also for individual literatures and languages, for racial, ethnic, and national groups, and for persons, and discusses facetting in its introduction
- Special faceted classifications have been designed for broad fields such as education or business management, as well as for more specialized ones such as occupational safety, the diamond industry, library and information science, and many others

CRITERIA FOR A SUCCESSFUL CLASSIFICATION SCHEME

- Classification schemes, as indicated earlier, vary widely
- Besides providing for the subject organization of the collection, a successful classification scheme may also contain devices for indicating method of treatment or form of materials treated, time periods, places, peoples, various types of persons, and other special categories
- Any or all of these devices may be justifiably and successfully used for a special situation such as a rare book collection or a collection concerned with a particular subject area or period
- Following is a list of a few criteria which may be generally applied to judge a successful classification system:

CRITERIA FOR A SUCCESSFUL CLASSIFICATION SCHEME

- **1. It must be inclusive as well as comprehensive.** That is, it must encompass the whole field of knowledge as represented in collectible media of communication and information. It must therefore include all subjects that are, have been, or may be recognized, allowing for possible future additions to the body of knowledge. It must make provision, not only for the records themselves, but for every actual and potential use of the records.
- **2. It must systematic.** only subjects locate easily whatever they want that available. It must be so arranged that each aspect subject can be considered separate, yet related, part scheme, and it must that new and aspects can be added a systematic manner. must be flexible and expansible. It must be constructed that any new subject may classification. must allow for recognized knowledge in all its ramifications, and be capable admitting new subjects or new aspects well-established subjects.

CRITERIA FOR A SUCCESSFUL CLASSIFICATION SCHEME

- **3. It must be flexible:** Important if the classification scheme is expansive and hospitable to highest degree. It should be current. Both the Dewey Decimal Office and Library of Congress send subscribing libraries periodic lists all changes in their schedules, noting additions and deletions. These notices and revisions are especially important subject areas in which there is a great deal of updates
- **4. It must employ terminology that is clear descriptive,** consistent with schedule and the index should reveal the significance of the arrangement. The terms themselves should be unambiguous and reasonably current, correctly identifying the concepts and characteristics present in the materials being classified

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BROAD AND CLOSE CLASSIFICATION

- Close Classification means classing specifically available subdivisions of the scheme, without minute breakdowns into narrower concepts
- The classifier using the schedules should understand that when library relatively few items in given subject area, I might actually be more useful than isolating each under own specific call number, since many graduated progressions the scheme represented the collection
- A library using Dewey Decimal Classification with large collection of books, for example, may need to classify Version in 220.5203, whereas smaller collection might back to the broad number Generally speaking, DDC provides small libraries opportunities does LC Classification to back broader notations, because its enumeration stresses logical progress through the natural subject matter, while the Library Congress bases enumeration more on large quantities of materials represented its shelves notations signify broad categories

BROAD AND CLOSE CLASSIFICATION

- Larger libraries, having more titles to arrange in given subject area, often prefer LC which offers opportunities for close classification
- However, specific practices can result in broad classification even though the scheme allows for close classification
- The Library of Congress, for example, often classifies all volumes of a monographic series together in the broad notation that exemplifies the theme of the series as a whole
- This results in individual volumes not being shelved with others on the same specific subject.

GENERAL PRINCIPLES OF CLASSIFICATION ...

- Most of this has been directed to the broad principles, methods, and problems of constructing classification systems
- Some attention should now be given to the application of any one such system to the ordering of a library collection and to the necessity of choosing the optimum location for each item.
- When classifying an item with respect to a particular library's holdings, it may be necessary to bypass existing minute or narrow concepts and class notations, or to insert new ones into the existing schedules
- Both of these modifications are usually possible in some degree, but classification schemes vary in their hospitality to local manipulation

GENERAL PRINCIPLES OF CLASSIFICATION ...

- It is assumed that such possibilities and difficulties were considered when the choice was made of one scheme over all others for use in a local library.
- Once the particular system of arrangement is chosen, certain general precepts enable the classifier to apply it meaningfully and consistently to the separate items and groups of items acquired by the library
- The following summary is designed to aid that process of continuous, cumulative application. These principles apply primarily to such linear (shelf) classifications as the Dewey Decimal and the Library of Congress schemes

GENERAL PRINCIPLES OF CLASSIFICATION ...

1. Class the item first according to subject, then subject is represented, except in the generalia class and in literature, where the form in which the form might be paramount. In most cases the classifier has to determine the subject matter of the item using the classification schedules as the matrix. This is no easy task, especially when the item does not cover a specific, easily recognized topic. Chapter 1 of this text provides a short summary of procedures used by catalogers in "reading an item technically." The technique is helpful in subject, as well as in descriptive, cataloging. Such features as the preface, introduction, table of contents, or index of a book; the slipcase of a sound recording; the documentation for a machine-readable data file; etc. may help the classifier to recognize the subject matter.
2. Class an item where it will be most useful. The classifier has to consider the nature of the collection (and the needs of the user). Generally speaking, this second principle is a part of the fundamental rule that characteristics chosen for classification are essential to the purpose for which the scheme was developed. At least two questions can be raised in this context:

GENERAL PRINCIPLES OF CLASSIFICATION ...

- a) What is the subject matter of the item and how does it relate to the nature of the collection? The procedures in a highly specialized library with a professional clientele will be different from those used in a public library.
- b) What is the form in which the subject is presented, or its method of treatment? For example, subject bibliographies can be classed in one of two ways. If they are put with related subject materials they will be more useful to a patron who wants titles on a given subject already represented in the library's holdings. If, as in both the DDC and LC classifications, the preferred location is in a separate bibliography section which is further subdivided into author bibliographies, national bibliographies, subject bibliographies, etc., then the "user" who benefits most is the librarian doing bibliographic verification, book order preparation, and the like.

GENERAL PRINCIPLES OF CLASSIFICATION ...

3. Place the item in the most specific subject division that will contain it, rather than with the general topic. In this respect it is helpful to study the morphology of the entire scheme, in order to answer such questions as:
 - a) What is the specific heading embracing the subject?
 - b) How is this subject subdivided in the classification schedule?
- Obviously if most libraries of any size would assign a single number to all books dealing with the history of France, failing to subdivide them by time periods and places, the result would be a discouragingly large assortment of volumes under one number. On the other hand, the uses of broad classification for definite, clearly recognized objectives, should not be overlooked.

GENERAL PRINCIPLES OF CLASSIFICATION ...

4. When the book deals with two or three subjects, place it with the predominant subject or with the one treated first. When the book deals with more than three subjects, place it in the general class that combines all of them. This principle requires little explanation. The subject that is treated most fully should take predominance over secondary subjects. If two subjects are coordinate (e.g., electricity and magnetism treated equally in the same volume) the item should be placed with whichever topic comes first.
- There are some refinements to this general principle for example:
- if the work covers two subjects, one of which is represented as acting upon or influencing the other, such a work should be classed under the subject influenced or acted upon
- Thus a work discussing French influence on English literature Religious Aspects of Philosophy should be classed under philosophy, not should be classed with English literature

GENERAL PRINCIPLES OF CLASSIFICATION ...

- On similar grounds a work such as religion, since a treatment of some particular aspect of a subject should be classed with the subject, not with the aspect.
- Another, perhaps more involved difficulty arises with the monographic series or collected set. Will Durant's Story of Civilization can be classed as an author's collection of twelve related volumes under a broad "history of civilization" number. Or the classifier can place volume 1 with other works on oriental civilization, volume 2 with those on Greek civilization, and so on
- The Library of Congress, as mentioned earlier, often classifies series and collected sets together, but has in recent years provided, for optional use by other libraries, an alternative, volume-specific class number in brackets on most of its separate records for monographs belonging to serial sets.

OTHER PRINCIPLES OF CLASSIFICATION ...

- 1. Class a work according to the author's intention.**
- 2. In works of the imagination, class by original language, then literary form, rather than by subject.**
- 3. Class a work in the most specific area possible.**
- 4. Class a work which covers two or more subjects with the subject which is discussed most.**
- 5. If a work includes two subjects in the same discipline which receive equal treatment, and are not used to introduce or explain one another, class the work with the subject coming first in the schedules.**

OTHER PRINCIPLES OF CLASSIFICATION ...

6. If a work treats **two aspects of a subject in different disciplines**, class the work at the interdisciplinary number if one is given (provided the work contains significant material on that discipline).
7. If **no subject is more important than another**, Class a work on three or more subjects that are all subdivisions of a broader subject with the first higher number which includes them all.
10. Class a work on **three or more subjects in different disciplines** in the generalities class.
11. Class **biographies, autobiographies, diaries and reminiscences** either with specific disciplines or together in a general biography section.
12. In general, class a work **first by subject then by geographical location**.
13. When there is a further subdivision and there is a **choice between subject and geographical location**, choose the subject first.
14. If a **subject acts upon another subject**, class it under the subject which is acted upon.

OTHER PRINCIPLES OF CLASSIFICATION ...

15. If a work has been **treated from a particular standpoint**, class in the subject unless it has been considerably altered.
16. Works on topics '**with special reference to**' are classed under the more specific subject.
17. When a subject has **no stated place** in the classification scheme, use the number of the subject to which it is most closely related.
18. When **two headings clash**, make a decision as to which is to prevail, and be consistent in its use.
19. Works **for and against a subject** go together at the subject.
20. **Avoid** putting something where it will seem like criticism.
eg do not place works on prostitution with law or ethics
21. **Always have a reason for your placing of a work.** You need to know why you assign a particular number
22. **Record all decisions.** Decisions about classification numbers may need to be referred to, to ensure consistent placement of similar works
23. **Check the number in the catalogue.** This will assist in placing similar works together.

Definitions

- **Subject analysis** is the part of indexing or cataloging that deals with the conceptual analysis of an item:
 - what is it about? what is its form/genre/format?
 - translates that analysis into a particular subject heading system
 - 1st step in classification
- **Subject heading:** a term or phrase used in a subject heading list to represent a concept, event, or name

Classification: Process of organizing resources by assigning an alphanumerical string that sorts physical objects by subject

Analysis vs. indexing

Analysis:

- Look at the work as a whole to determine its overall contents
- Think of terms that summarize the primary subject focus of the work

Indexing:

- Provide in-depth access to parts of items (chapters, articles, detailed listing of topics)

Determining the subject content

Examine the subject-rich portions of the item being cataloged to identify key words and concepts:

- Title
- Table of contents
- Introduction or preface
- Author's purpose or forward
- Abstract or summary
- Index
- Illustrations, diagrams
- Containers

Types of concepts to identify

- Topics
- Names of:
 - Persons
 - Corporate bodies
 - Geographic areas
- Time periods
- Titles of works
- Form of the item

Subjects vs. forms/genres

- Subject: what the item is about
- Form: what the item is, rather than what it is about
 - Physical character (video, map, miniature book)
 - Type of data it contains (statistics)
 - Arrangement of information (diaries, indexes)
 - Style, technique (drama, romances)
- Genre: works with common theme, setting, etc.
 - Mystery fiction; Comedy films

Important factors in cataloguing and classification: Objectivity

- Catalogers must give an accurate, unbiased indication of the contents of an item
- Assess the topic objectively, remain open minded
- Consider the author's intent and the audience
- Avoid personal value judgments
- Give equal attention to works, including:
 - Topics you might consider frivolous
 - Works with which you don't agree

Important factors in cataloguing and classification: Cataloger's judgment

- Individual perspective
- Informed by the cataloger's background knowledge of the subject
- Informed by the cataloger's cultural background
- Consistency in *determining* “What is it about?” leads to greater consistency in *assignment* of subject headings

Translating key words & concepts into subject headings

- Controlled vocabulary
 - Thesauri (examples)
 - Art & Architecture Thesaurus (AAT)
 - Thesaurus of ERIC Descriptors
 - Subject heading lists (examples)
 - Library of Congress Subject Headings
 - Sears List of Subject Headings
 - Medical Subject Headings (MeSH)

Why use controlled vocabulary?

- Controlled vocabularies:
 1. identify a preferred way of expressing a concept
 2. allow for multiple entry points (i.e., cross-references) leading to the preferred term
 3. identify a term's relationship to broader, narrower, and related terms
 4. “syndetic structure”

Function of keywords

- Advantages:
 - provide access to the words used in bibliographic records
- Disadvantages:
 - cannot compensate for complexities of language and expression
 - cannot compensate for context
- Keyword searching is enhanced by assignment of controlled vocabulary!

6. Typology of classification schemes

- There are two major ways of categorizing subject classification schemes
 - i. General
 - ii. Functional

6. Typology of classification schemes

General

- There are many standard systems of library classification in use, and many more have been proposed over the years. However, in general, classification systems can be divided into three types depending on how they are used:

1 Universal schemes

- Covers all subjects, e.g. the Dewey Decimal Classification (DDC), Universal Decimal Classification (UDC), Library of Congress Classification (LCC), and Colon Classification (CC)

2 Specific classification schemes

- Covers particular subjects or types of materials, e.g. Iconclass (art), British Catalogue of Music Classification, and Dickinson classification (music), or the NLM Classification (medicine)

3 National schemes

- Specially created for certain countries, e.g. the Swedish library classification system, SAB (Sveriges Allmänna Biblioteksförening)

6. Typology of classification schemes ...

Functional

- In terms of functionality, classification systems are often described as:
 1. **Enumerative:** Subject headings are listed alphabetically, with numbers assigned to each heading in alphabetical order.
 2. **Hierarchical:** Subjects are divided hierarchically, from most general to most specific.
 3. **Faceted/analytico-synthetic:** Subjects are divided into mutually exclusive orthogonal facets.

6. Typology of classification schemes ...

- There are few completely enumerative systems or faceted systems; most systems are a blend but favouring one type or the other.
- The most common classification systems, LCC and DDC, are essentially enumerative, though with some hierarchical and faceted elements (more so for DDC), especially at the broadest and most general level.
- The first true faceted system was the colon classification of S. R. Ranganathan.

Dewey Decimal Classification

6.1 Dewey Decimal Classification;

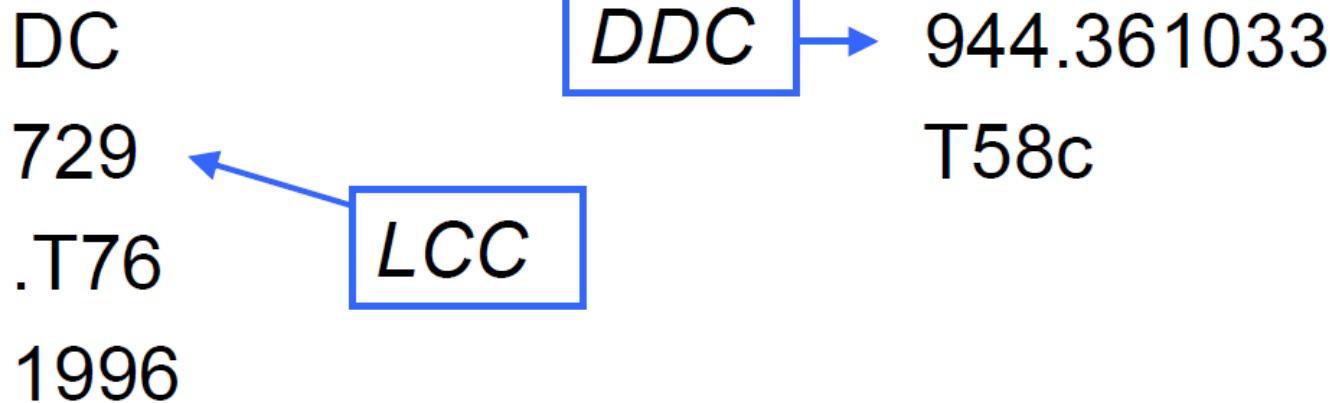
- Colloquially the Dewey Decimal System, is a proprietary library classification system which allows new books to be added to a library in their appropriate location based on subject
- First published in the United States by Melvil Dewey in 1876
- Originally described in a forty-four-page pamphlet, it has been expanded to multiple volumes and revised through 23 major editions, the latest printed in 2011.
- Also available in an abridged version suitable for smaller libraries. OCLC, a non-profit cooperative that serves libraries, currently maintains the system and licenses online access to WebDewey, a continuously updated version for catalogers.
- The Decimal Classification introduced the concepts of relative location and relative index.

6.1 Dewey Decimal Classification..

- Libraries previously had given books permanent shelf locations that were related to the order of acquisition rather than topic.
- The classification's notation makes use of three-digit numbers for main classes, with fractional decimals allowing expansion for further detail.
- Numbers are flexible to the degree that they can be expanded in linear fashion to cover special aspects of general subjects.
- A library assigns a classification number that unambiguously locates a particular volume in a position relative to other books in the library, on the basis of its subject.
- The number makes it possible to find any book and to return it to its proper place on the library shelves
- The classification system is used in 200,000 libraries in at least 135 countries

Brief look at DDC & LCC

City on the Seine: Paris in the time of Richelieu
and Louis XIV / Andrew Trout, 1996.



Dewey Decimal Classification (DDC)

- Developed by Melvil Dewey in 1876
- Widely used by public and school libraries in the U.S.
- Used in more than 135 countries
- Translated into over 30 languages
- DDC now owned by OCLC, available in print and web editions

DECIMAL CLASSIFICATION

- Of modern library classification schemes, the Dewey Decimal Classification (DDC)¹ is both the oldest and the most widely used in the United States. It also has a substantial following abroad. Such widespread use is a tribute to Melvil[le Louis Kossuth] Dewey, whose original plan was adaptable enough to incorporate new subjects as they emerged and flexible enough to withstand the changes imposed by the passage of time.
- Dewey was born on December 10, 1851, and graduated from Amherst College in 1874, where he became assistant college librarian. He actually began developing the first draft of his system for arranging books while working as a student assistant in the college library in 1873. He soon became a leader in American librarianship, helping to found both the American Library Association (ALA) and the first American library school at Columbia University.
- Being a man of many interests, he was also an advocate of spelling reform. He shortened his forename to “Melvil,” dropped his two middle names, and even attempted to change the spelling of his surname to “Dui.” Throughout his career he promoted librarianship by his teaching, writing, and speaking. In recognizing and acting upon the need to systematize library collections for effective use, he knew of various previous attempts, but found them inadequate.

DECIMAL CLASSIFICATION

- Dewey never claimed to have originated decimals for classification notation, but earlier systems used them merely as shelf location devices with no significant relation to the subject matter. What Dewey did claim as original, and with some justification, was his “relativ [relative] index,” compiled as a key to the “diverse material” included in his tables. His most significant contribution was perhaps the use of decimals for hierarchical divisions. Combined with the digits 0 to 9, decimals provide a pure notation that can be subdivided indefinitely
- The first edition of Dewey’s scheme, prepared for the Amherst College Library, was issued anonymously in 1876 under the title *A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library*. It included schedules to 1,000 divisions numbered 000–999, together with a relative index and prefatory matter—a total of 44 pages. The second, “revised and greatly enlarged” edition was published under Dewey’s name in 1885. Since that time 20 more full editions and 14 abridgments have appeared.

DECIMAL CLASSIFICATION

- The fourteenth edition, published in 1942, remained the standard edition for many years because an experimental index to the fifteenth edition, published in 1951, was unsuccessful. In 1958 the sixteenth edition appeared with many changes and additions, including a complete revision of sections 546–47, “Inorganic and Organic Chemistry.” Since that time each successive edition has carried, besides other, less sweeping changes, totally new developments of one or more targeted portions of the system. The present twenty-second edition (*DDC22*) was published in 2003; the associated fourteenth abridged edition was published in 2004
- *DDC* notations are assigned the tag 082 in *MARC 21* (the current MAchine-Readable Cataloging format used by Canada, Great Britain, and the United States) when they have been created for a particular item by the Library of Congress (LC) or other national cataloging agency. A *DDC* notation created by a local library participating in a network is placed in MARC field 092. *DDC* complete call numbers are also placed in field 092, regardless of who assigned the *DDC* notation to the item involved. Closely related to *DDC* is the *Universal Decimal Classification (UDC)*, which was based originally on *DDC*. It is discussed briefly at the end of this chapter.

DECIMAL CLASSIFICATION

BASIC CONCEPTS

- The system arranges all knowledge as represented by library materials into ten broad subject classes numbered from 000 to 900. Using Arabic numerals for symbols, it is flexible to the degree that numbers can be expanded in linear fashion to cover special aspects of general subjects. Theoretically, expansions may continue indefinitely.
- The more specific the work being classified, the longer the number combination tends to grow. LC records have been known to carry suggested Dewey numbers containing 21 digits, i.e., 18 decimal places. Such long numbers, however accurate, are unwieldy; it is hard to crowd them onto book spines and audio-visual containers, and dangers of miscopying and misshelving are multiplied. For these and related reasons many larger libraries have turned from *DDC* to some other system, such as *Library of Congress Classification (LCC)*, which has a more economical notation.

DECIMAL CLASSIFICATION

BASIC CONCEPTS ...

- Nevertheless, the *DDC* system has many advantages. Its content is compact, consisting in *DDC22* of a volume for introductory matter, the manual, auxiliary tables, and lists of relocations, discontinuations and reused numbers; two volumes for schedule summaries and schedule development; and a fourth volume for the index. It incorporates many mnemonic devices that can be transferred from one class to another (e.g., “-03” at the end of a classification number of any length often indicates a dictionary of the subject at hand).
- The classifier, once familiar with the system, can apply it to incoming materials quite rapidly. It provides a limited number of optional alternative locations and allows for great detail of specification. Patrons are likely to be familiar with it, because it is the system most frequently used in school and public libraries.

DECIMAL CLASSIFICATION

- Furthermore, it arranges subjects from the general to the specific in a logical order, which often can be traced by analogy through more than one class. It is philosophical in conception, being based on a systematic outline of knowledge that allows for subjects not yet known. Even so, the overall arrangement is not preemptively theoretical or logical. Dewey's intent was to provide a practical system for classifying books. This primary application to the books generally found in American libraries remains one of its notable limitations, although efforts have been made in later editions to rectify that bias
- A basic premise of the Dewey approach is that there is no one class for any given subject. The primary arrangement is by discipline. Any specific topic may appear in any number of disciplines. Various aspects of such a topic are usually brought together in the relative index. For example, a work on "families" may be classified in one of several places depending on its emphasis, as can be seen in the table below. Besides the aspects shown there, other material on families may be found in still different *DDC* numbers. Use of the relative index would lead the classifier to some of them

SCHEDULE FORMAT

- **SCHEDULE FORMAT**
- At the beginning of volume 2, *DDC22* provides three summaries, showing successively the 10 main classes, the 100 divisions, and the 1,000 sections of the basic scheme. Each class consists of a group of related disciplines.
- **Summary of the 10 Main *DDC* Classes**
- 000 Computer science, information & general works
- 100 Philosophy & psychology
- 200 Religion
- 300 Social sciences
- 400 Language
- 500 Science
- 600 Technology
- 700 Arts & recreation
- 800 Literature
- 900 History & geography
- Each main class is separated into 10 divisions, although a few of these, as well as some further subdivisions, may seem to be rather artificially located within the class. The hundred divisions are shown in the “Second Summary,” e.g.,

SCHEDULE FORMAT

Summary of the Divisions of a Typical *DDC* Class

- 600 Technology
- 610 Medicine & health
- 620 Engineering
- 630 Agriculture
- 640 Home & family management
- 650 Management & public relations
- 660 Chemical engineering
- 670 Manufacturing
- 680 Manufacture for specific uses
- 690 Building & construction

Each division is subdivided into 10 sections. Again some of these may seem artificially located. The one thousand sections are shown in the “Third Summary,” e.g.,

SCHEDULE FORMAT

Summary of the Sections of a Typical *DDC* Division

610 Medicine & health

611 Human anatomy, cytology & histology

612 Human physiology

613 Personal health & safety

614 Incidence & prevention of disease

615 Pharmacology & therapeutics

616 Diseases

617 Surgery & related medical specialties

618 Gynecology, obstetrics, pediatrics & geriatrics

619 [Unassigned]

Volume 2 presents in detail the subjects placed in 000 through 599. Fully detailed schedules for subjects placed in 600 through 999 are in volume 3. In the full schedules, each of the 1,000 numbers that has subdivisions extending over more than two pages gives a summary of the “tens” place past the decimal point, e.g.,

SCHEDULE FORMAT

612 Human physiology

SUMMARY

612.001-.009 Standard subdivisions

.01-.04 [Biophysics, biochemistry, control processes, tissue and organ culture, physiology of specific activities]

.1 Blood and circulation

.2 Respiration

.3 Digestion

.4 Hematopoietic, lymphatic, glandular, urinary systems

.6 Reproduction, development, maturation

.7 Musculoskeletal system, integument

.8 Nervous system Sensory functions

.9 Regional physiology

At a few places within the schedules, multilevel summaries are provided. An example of this can be found at “610 Medicine & health.”

SCHEDULE FORMAT

- *Entries in Schedules*
- In the full schedules the 1,000 sections are listed separately, followed in detail by any subdivisions they may have.
- There are often asymmetries attesting to the fact that the phenomena of the world cannot always be subdivided and re-subdivided into groups of 10:

SCHEDULE FORMAT

Extended Decimal Subdivision of a *DDC* Topic

612 Human physiology

612.1 Blood and circulation

612.11 Blood

612.12 Blood chemistry

612.13 Blood vessels and vascular circulation

612.14 Blood pressure

612.17 Heart

612.18 Vasomotors

Successive lengthening of the base number by one
(occasionally two or three) digit(s) achieves stepwise
division

This pyramidal structure means that, in subject relationships,
what is true of the whole is true of the parts

For instance, the medical sciences are a branch of
technology; physiology is a medical science, etc

SCHEDULE FORMAT

A Typical *DDC* Hierarchical Sequence

- 600 Technology
- 610 Medicine & health
- 612 Human physiology
- 612.1 Blood and circulation
- 612.11 Blood
- 612.112 Leukocytes (White corpuscles)
- 612.112 7 Counts and counting
- As the notation expands beyond the decimal point, *DDC* editors introduce a space after every third number. The spaces are inserted merely to facilitate reading the closely listed digits. On library materials and bibliographic records they should be omitted, so that the number will occupy no more space than is absolutely necessary
- The final number in the example above would be written “612.1127” in a bibliographic record. The schedules rarely display numbers with more than four decimal places, although the relative index sometimes expands numbers to eight or even nine decimals.

SCHEDULE FORMAT

A Typical *DDC* Hierarchical Sequence

- In the index we find “Radiation injuries — animals — veterinary medicine 636.089 698 97.” Yet the schedules proper expand “636 — Animal husbandry” only as far as “636.089 — Veterinary sciences Veterinary medicine.” Instructions at 636.089 in the schedules allow the building of the longer number found in the index. The concept of building numbers is explained later in this chapter.
- Certain places in the schedules where fully symmetrical expansion cannot be maintained are given *centered entries*, which represent concepts for which there is no specific number in the notational hierarchy and which, therefore, cover an abbreviated span of numbers. These appear with centered lines immediately above them and with the symbol “>” at their left margins. Centered entries are always followed by a note that tells where to class comprehensive works that cover the subject represented by the centered entry, e.g.:

SCHEDULE FORMAT

- A Typical *DDC* Centered Entry
- > 439.6–439.8 Specific North Germanic languages
- Class comprehensive works in 439.5
- Other useful formatting devices are the section numbers and running titles at the top of each page of volumes 2 and 3 (the schedules), the use of boldface and light-face type in various sizes, left hand marginal indentions to indicate hierarchical structure, and the use of square brackets for numbers from which a topic has recently been shifted (or “relocated”).

SCHEDULE FORMAT – NOTES

- Perhaps the most helpful sources of information for the *DDC* classifier are the notes. There are several major kinds of notes in the twenty-second edition: notes that tell what is found at a classification, notes that tell what is found at other classifications, “including” notes (i.e., notes that identify topics in “standing room”), notes that explain changes in schedules and tables, notes that instruct the classifier in number building, notes that prescribe citation and preference order, and notes that explain options.
- Notes found in the first two groups have what is called “hierarchical force.” This means that they are applicable to all the subdivisions under the number that has the note, as well as to the number with the note.

SCHEDULE FORMAT - NOTES

- Notes that tell what is found at a classification

These notes include scope notes, definition notes, number-built notes, former heading notes, variant name notes, and class-here notes. An example of a scope or definition note is found at “553 Economic geology.” The first note there reads, “Quantitative occurrence and distribution of geologic materials of economic utility.”

- Notes that tell what is found at other classifications

These notes begin with the words *class*, *for*, or *see also*.

For example, at “070.9 Historical and persons treatment of journalism and newspapers” is found the note, “Class historical treatment of specific topics of journalism in 070.41-070.49.” At “338.5

SCHEDULE FORMAT - NOTES

- **Including notes (notes that identify topics in “standing room”)**
 - These notes provide a location for topics that do not yet have enough works about them to justify a separate number. It is assumed that there may be more works in the future, in which case the topics could be assigned their own number. Therefore, the rules for applying *DDC* do not allow number building of any kind (including additions of standard subdivisions) for topics in “standing room.”
- **Notes explaining changes in schedules and tables**
 - These notes tell a user of the schedules that there have been changes at a particular number since the last edition of *DDC*. There may have been revisions of contents covered, a discontinuation of coverage either for a whole number or for a part of its contents, or a relocation of all or part of the contents.
- **Notes that instruct the classifier in number building**
 - Number-building instructions provide ways to gain greater depth of analysis at a particular classification. Number building is discussed in detail below.

SCHEDULE FORMAT - NOTES

- **Notes that prescribe citation and preference order**
- These notes help a classifier decide which of more than one aspect or characteristic to use for classification. Citation order allows the use of two or more characteristics (i.e., facets) in a specified order.
- **Notes that explain options**
- Such notes are usually given in parentheses and may be of benefit in providing alternative methods for handling certain situations. International users find that options for religions, languages, and literatures allow them to give preferred treatment for local needs. One option often followed is: 016 Bibliographies and catalogs of works on specific subjects or in specific disciplines

NUMBER BUILDING

- A premise in working with *DDC* is that all possible numbers are not specifically printed in the schedules, but more precise numbers than those printed can be built or synthesized using tables or other parts of the schedules.
- ***Adding from Auxiliary Tables***
- Auxiliary tables 1 through 6, found in volume 1 of *DDC22*, give the classifier one way to expand existing numbers in the schedules. Each number in these tables is preceded by a dash to show that it cannot stand alone as a classification number. The dash should be omitted when the number is attached to a class notation.
- **Table 1. Standard Subdivisions**
- As was noted under the “General Principles of Classifying” section of chapter 14, all shelf classifications provide a dual approach. Some items are grouped on the basis of their subject content, while others are placed according to their form or genre. The standard subdivisions supplied in auxiliary Table 1 derive from what was called in earlier editions a table of “form divisions.”

NUMBER BUILDING

- The following illustrates some of the categories to be found in Table 1.
 - —01 **Philosophy and theory.** An exposition of any subject
 - treated from the theoretical point of view.
 - *Example:* 701 Philosophy of the Arts
 - —03 **Dictionaries, encyclopedias, concordances.**
 - *Example:* 720.3 Dictionary of Architecture
 - —05 **Serial publications.** Used for publications in which the
 - subject is treated in articles, papers, etc.
 - *Example:* 720.5 Architectural Record

NUMBER BUILDING

- **Table 2. Geographic Areas, Historical Periods, Persons**
- When a given heading can be subdivided geographically and the library has many books dealing with that subject, it is recommended that the classifier use Table 2 (the area table), which allows one to expand the number systematically by region or site.
- **Table 3. Individual Literatures and the Arts**
- Table 3, “Subdivisions for the Arts, for Individual Literatures, for Specific Literary Forms,” is actually three tables: Table 3A, “Subdivisions for Works by or about Individual Authors,” Table 3B, “Subdivisions for Works by or about More than One Author,” and Table 3C, “Notation to be Added Where Instructed in Table 3B, 700.4, 791.4, 808–809.”
- **Table 4. Individual Languages**
- Table 4, “Subdivisions of Individual Languages and Language Families,” is used with base numbers for individual languages, as explained under 420–490.

NUMBER BUILDING

- **Table 5. Ethnic and National Groups**
- Table 5, “Ethnic and National Groups,” is used according to specific instructions at certain places in the schedules or in other tables, or through the interposition of “–089 [History and description with respect to] Ethnic and national groups” from Table 1.
- **Table 6. Languages**
- Table 6, “Languages,” is a basic mnemonic table used to indicate the particular language of a work or the language that is the subject matter of a work. It is used as instructed in the schedules or other tables. The summary includes:
 - —1 Indo-European languages
 - —2 English and Old English (Anglo-Saxon)
 - —3 Germanic languages
 - —4 Romance languages
- ***Adding from Other Parts of the Schedules***
- There are a number of places in the schedules where the classifier is instructed to find a number elsewhere in the schedules and to add it whole to the number at hand, as demonstrated by the following example:
 - 750 Painting and paintings
 - 758 Other subjects [other than those listed for 751 through 757]

THE RELATIVE INDEX

- The “relative” index is so called because it is claimed to show relationships of each specific topic to one or more disciplines and to other topics.
- It contains terms found in the schedules and tables, and synonyms for those terms; names of countries, states, provinces, major cities, and important geographic features; and some names of persons.
- It does not have phrases that contain concepts represented by standard subdivisions (e.g., “Medical education”). Many *see also* references are given (e.g., “Organizations . . . *see also* Religious organizations”).

BROAD AND CLOSE CLASSIFICATION

- Because it offers a wide variety of techniques and nearly limitless expansions in number building, *DDC* is hospitable to all the titles that a large library might add in any subject. It also offers various ways to meet the limited needs of smaller libraries.
- The classifier must remember that, in general, when there are relatively few works in a given subject area, *DDC* encourages broad classification. Digits in class notations after decimal points may be cut off at any appropriate place.
- The present policy of the Library of Congress is to provide bibliographic records with *DDC* numbers from one to three segments.

Library of Congress Classification

8.2 Library of Congress Classification

Scheme:

- The Library of Congress Classification (LCC) is a system of library classification developed by the Library of Congress in the United States, which can be used for shelving books in a library.
- used by most research and academic libraries in the U.S. and several other countries.
- LCC should not be confused with LCCN, the system of Library of Congress Control Numbers assigned to all books (and authors), which also defines URLs of their online catalog entries, such as "42037605" and
- The Classification is also distinct from Library of Congress Subject Headings, the system of labels such as "Boarding schools" and "Boarding schools—Fiction" that describe contents systematically
- The classifications may be distinguished from the call numbers assigned to particular copies of books in the collection, such as "PZ7.J684 Wj 1982 FT MEADE Copy 1" where the classification is "PZ7.J684 Wj 1982".
- The classification was developed by James Hanson (chief of the Catalog Department), with assistance from Charles Martel, in 1897
- With advice from Charles Ammi Cutter, it was influenced by his Cutter Expansive Classification, the Dewey Decimal System, and the Putnam Classification System (developed while Putnam was head librarian at the Minneapolis Public Library

8.2 Library of Congress Classification Scheme

- It was designed specifically for the purposes and collection of the Library of Congress to replace the fixed location system developed by Thomas Jefferson. By the time Putnam departed from his post in 1939, all the classes except K (Law) and parts of B (Philosophy and Religion) were well developed.
- LCC has been criticized for lacking a sound theoretical basis; many of the classification decisions were driven by the practical needs of that library rather than epistemological considerations
- Although it divides subjects into broad categories, it is essentially enumerative in nature. That is, it provides a guide to the books actually in one library's collections, not a classification of the world.
- In 2007 The Wall Street Journal reported that in the countries it surveyed most public libraries and small academic libraries used the older Dewey Decimal Classification system.
- The National Library of Medicine classification system (NLM) uses the initial letters W and QS–QZ, which are not used by LCC.
- Some libraries use NLM in conjunction with LCC, eschewing LCC's R for Medicine. Others use LCC's QP–QR schedules and include Medicine R.

Purpose of LCC Scheme

1. Developed by the Library of Congress for organizing its own collections
2. Adopted by other libraries, particularly academic and research libraries
3. Initially a shelf-location device
4. A useful retrieval tool in online systems
5. Limited use as a tool for organizing web resources

Library of Congress Classification (LCC)

- Designed to arrange LC's collections
- Widely used in academic libraries
- Enumerative – more is spelled out in the schedules
- Larger – over 40 separate volumes
- Economical notation (shorter numbers)

Brief history

- ⓘ The Library of Congress established in 1800 when the American legislature was preparing to move from Philadelphia to the new capital city of Washington, D.C.
- Section five of "An Act to Make Further Provision for the Removal and Accommodation of the Government of the United States," signed by President John Adams on April 24, 1800, provided a sum of \$5,000 "for the purchase of such books as may be necessary for the use of Congress and the said city of Washington, and for fitting up a suitable apartment for containing them."

Brief history (2)

- Early on, books were grouped by size and, within size groups, by accession number, as reflected in the first (1802) and the second (1804) LC catalogs
- The first recorded change in the arrangement of the collection reflected in the Library's third catalog (1808), showing added categories for special bibliographic forms such as plans, state laws, legislative and executive reports and papers, financial reports, and gazettes.

Brief history (3)

- Burning of the US Capitol and the Library of Congress's collection in 1814 by British soldiers
- Purchase of Thomas Jefferson's personal library of 6,487 books, classified by Jefferson's own system
- Library of Congress retaining Jefferson's classification system

Brief history (4)

- Expansion of the Library's collection from seven thousand books to nearly one million by 1890s
- LC's move to a new building in 1897
- Contemplation of a new classification scheme for the Library
- Decision for its development in 1900
- Provisional outline proposed in 1901

Brief history (5)

- James C. M. Hanson, Head of the Catalogue Division, and Charles Martel, the newly appointed Chief Classifier, responsible for new classification scheme
- Use of Cutter's *Expansive Classification* as a guide for the order of classes in the broad
- outline of the LC Classification Considerable changes made in notation

Current outline

- A -- GENERAL WORKS
- B -- PHILOSOPHY. PSYCHOLOGY. RELIGION
- C -- AUXILIARY SCIENCES OF HISTORY
- D -- HISTORY (GENERAL) AND HISTORY OF EUROPE
- E -- HISTORY: AMERICA
- F -- HISTORY: AMERICA
- G -- GEOGRAPHY. ANTHROPOLOGY. RECREATION
- H -- SOCIAL SCIENCES
- J -- POLITICAL SCIENCE
- K -- LAW
- L -- EDUCATION
- M -- MUSIC
- N -- FINE ARTS
- P -- LANGUAGE AND LITERATURE
- Q -- SCIENCE
- R -- MEDICINE
- S -- AGRICULTURE
- T -- TECHNOLOGY
- U -- MILITARY SCIENCE
- V -- NAVAL SCIENCE
- Z -- BIBLIOGRAPHY. LIBRARY SCIENCE. INFORMATION RESOURCES (GENERAL)

Brief history (6)

- Each schedule contains an entire class, a subclass, or a group of subclasses
- Individual schedules of LCC developed and maintained by subject experts
- Conversion from print to electronic format beginning in early 1990s
- Conversion using the *USMARC (now called MARC 21) Classification Format*

General characteristics of schedules

- Developed independently by different groups of subject specialists
- Enumerative -- aspects of a subject explicitly provided by the schedules
- Based on literary warrant
- Unifying elements common to all schedules
 - Physical format (print schedules)
 - Internal arrangement of classes and subclasses
 - Notation
 - Auxiliary tables
- General to specific, creating a hierarchical display
 - Levels of hierarchy are indicated by indentation

Broad outline of LCC

I. General Works (A)

II. Humanistic Disciplines & Social Sciences (B-P)

- Philosophy, Religion, History, Geography

Anthropology, Social Sciences, Music, Fine
Arts, Language & Literature

III. Natural Sciences & Technology (Q-V)

- Math, Physical & Biological Sciences, Medicine,
Agriculture, Technology, Military & Naval Sciences

IV. Bibliography & Library Science (Z) 4

Advantages to using LCC vs. DDC?

1. Widely available on catalog copy with complete call number
2. Relatively unlimited expansion, not requiring wholesale revision
3. Shorter numbers
4. Cooperative opportunity to introduce new numbers

Disadvantages of using LCC vs. DDC?

1. Lack of consistency among schedules
2. Too large for an individual to fully master
3. No single index
4. Too complex for children's collections
5. Based on literary warrant from LC's collections
6. Parts of its organization still reflect 19th/early 20th century worldview

Main classes (1)

- Entire field of knowledge divided into main classes
- Roughly equal to academic disciplines or areas of study
- Denoted by single capital letters

Main classes (2)

- | | |
|---------------------------------------|-------------------------------------|
| A General works | M Music |
| B Philosophy, Psychology,
Religion | N Fine Arts |
| C History - Auxiliary | P Language & Literature |
| D History - Universal & Old
World | Q Sciences |
| E-F History of the Americas | R Medicine |
| G Geography | S Agriculture |
| H Social Sciences | T Technology |
| J Political Science | U Military Science |
| K Law | V Naval Science |
| L Education | Z Bibliography & Library
Science |

Subclasses (1)

- Represent branches of the disciplines
- Denoted by double or triple capital letters

S – Agriculture

SB – Plant culture

SD – Forestry

SF – Animal culture

SH – Aquaculture. Fisheries. Angling

SK – Hunting sports

Subclasses (2)

- Schedules D and K use triple letters

DAW – History of Central Europe

KBP – Islamic law

KFA – Law of U.S. States, Alabama to Arkansas

- Schedules E and F use only single letters

E-F History: America

E – United States (General)

F – United States local history. Canada. Latin America

Structure of LC Classification

- Basic arrangement is by discipline
- Various aspects of a subject are generally not grouped together, but are classed with the discipline
 - Agriculture:
 - technical aspects in S (Agriculture)
 - agricultural economics in HD (sub-class of Economics)

Structure of LC Classification (2)

- Railroads:
 - Railroad engineering in TF (sub-class of technology)
 - Organization and management of railroads in HE (transportation and communication, a sub-class of economics)
- Remember: LCC separates books on the same subject by discipline

Within each subclass...

- Subclasses further divided to specify form, place, time & subtopics
- Topical divisions often further subdivided by subtopics
- Denoted by integers 1-9999, some with decimal extensions
- Some subtopics may also be denoted by a Cutter number (e.g., .M84)

Notes used in schedules

- Scope notes
 - Explain what the classification covers
 - Used when similar topics occur in different areas
 - Designated by “Class here”
- Explanatory “see” notes
 - Used when a topic logically belongs in one division, but is covered elsewhere
 - Designated by “For”

QE

GEOLOGY

Reptiles

861

General works, treatises, and textbooks

Dinosaurs

- Class here works on dinosaurs in general
- For works on specific orders of dinosaurs
see QE862.A-Z

861.2

Periodicals, societies, congresses

861.3

Dictionaries

861.35

Computer network resources

Including the Internet

861.4

General works

861.5

Juvenile works

Notes used in schedules (2)

- “See” notes
 - Used to indicate topics relocated to other parts of the schedule(s)
 - Former number removed or, often, parenthesized

QE	GEOLOGY
	Reptiles
862.A-Z	Other systematic divisions, A-Z
862.C5	Chelonia. Testudinata
862.C7	Cotylosauria
862.C8	Crocodylia
→(862.D4)	Dicynodontia see QE862.T5

- “Including” notes
 - Provides examples of the topics covered by a particular caption
- Confer notes
 - Designated by the abbreviation “Cf.”
 - Indicates other aspects of the topic may be found elsewhere in the schedule(s)

QK

BOTANY

83

Plant lore

- Cf. GR780-790 Folklore
- National plants. Official plants
- Including state, provincial, etc. plants

84.8

General works

By region or country

85

United States

85.3.A-Z

Other regions or countries, A-Z

97.5

Identification

- For geographic treatment see QK108-474.5

Physical format

- Each print schedule contains
 - Preface
 - Broad outline with subclasses
 - Detailed outline with 2 or 3 levels of hierarchy
 - Schedule (the actual class numbers)
 - Tables
 - Index

Q Science

Broad outline

Science (General)	Q
Mathematics	QA
Astronomy	QB
Physics	QC
Chemistry	QD
Geology	QE

OUTLINE

Q1–390	Science (General)
Q1–295	General
Q300–390	Cybernetics
Q350–390	Information theory
QA1–939	Mathematics
QA1–43	General
QA47–59	Tables
QA71–90	Instruments and machines
QA75–76.95	Calculating machines
QA75.5–76.95	Electronic computers. Computer science
QA76.75–76.765	Computer software
QA101–(145)	Elementary mathematics. Arithmetic
QA150–272.5	Algebra
QA273–280	Probabilities. Mathematical statistics
QA299.6–433	Analysis
QA440–699	Geometry. Trigonometry. Topology
QA801–939	Analytic mechanics

Detailed outline



Tables

- Tables are used extensively in LCC
- Allow for subarrangement of similar topics without the need to print the same information repeatedly
- Some tables apply to very limited topics, some are used throughout the system
- Lots of help with tables throughout the workshop

THE CUTTER TABLE

(1) after the initial vowels								
For the second letter:	b	d	l-m	n	p	r	s-t	u-y
Use number:	2	3	4	5	6	7	8	9
(2) after the initial letter S								
For the second letter:	a	ch	e	h-i	m-p	t	u	w-z
Use number:	2	3	4	5	6	7	8	9
(3) after the initial letters QU								
For the second letter:	a	e	l	o	r	t	y	
Use number:	3	4	5	6	7	8	9	
For initial letters Qa-Qt, use:	2-29							
(4) after other initial consonants								
For the second letter:	a	e	i	o	r	u	y	
Use number:	3	4	5	6	7	8	9	
(5) when an additional number is preferred								
For the third letter:	a-d	e-h	i-l	m-o	p-s	t-v	w-z	
Use number:	3	4	5	6	7	8	9	

Practical: How to classify using LCC Scheme

Book title: Human Anatomy

Author: Mulanda, Ahmed

Year of Publication: 2024

Order of notation

Main Class

Sub class

Cutter number

Year of Publication

Call number

QM

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8.3 Universal Decimal Classification Scheme

- is a bibliographic and library classification representing the systematic arrangement of all branches of human knowledge organized as a coherent system in which knowledge fields are related and inter-linked
- The UDC is an analytico-synthetic and faceted classification system featuring detailed vocabulary and syntax that enables powerful content indexing and information retrieval in large collections
- Since 1991, the UDC has been owned and managed by the UDC Consortium a non-profit international association of publishers with headquarters in The Hague, Netherlands.
- Unlike other library classification schemes that have started their life as national systems, the UDC was conceived and maintained as an international scheme. Its translation into other languages started at the beginning of the 20th century and has since been published in various printed editions in over 40 languages

8.3 Universal Decimal Classification Scheme.

- UDC Summary, an abridged Web version of the scheme, is available in over 50 languages
- The classification has been modified and extended over the years to cope with increasing output in all areas of human knowledge, and is still under continuous review to take account of new developments
- Albeit originally designed as an indexing and retrieval system, due to its logical structure and scalability, UDC has become one of the most widely used knowledge organization systems in libraries, where it is used for either shelf arrangement, content indexing or both
- UDC codes can describe any type of document or object to any desired level of detail. These can include textual documents and other media such as films, video and sound recordings, illustrations, maps as well as realia such as museum objects.

UDC Outline

MAIN TABLES

- o Science And Knowledge. Organization. Computer Science. Information. Documentation. Librarianship. Institutions. Publications
- 1 Philosophy. Psychology
- 2 Religion. Theology
- 3 Social Sciences
- 5 Mathematics. Natural Sciences
- 6 Applied Sciences. Medicine. Technology
- 7 The Arts. Recreation. Entertainment. Sport
- 8 Language. Linguistics. Literature
- 9 Geography. Biography. History

8. General Classification

schemes:

- A general classification system is designed for the entire domain of knowledge
- It aims to cover all subjects equally ('the universe of information')
- Three most widely used general classification schemes are :
 - Dewey Decimal Classification (DDC) [?](#)
 - Universal Decimal Classification (UDC) [?](#)
 - Library of Congress Classification (LCC)

Disadvantages of General Schemes

- 1. Most of them do not give adequate detail for accurate specification of the highly complex subjects in papers and reports that documentation must handle today
- 2. Despite the comprehensiveness and variety of certain general schemes, they do not fully cater to the special viewpoints of each particular library and information center
- 3. Even if they are varied in viewpoint, they do not sufficiently provide for the flexible combination of terms which highly specific subject headings demand
- 4. Even if flexible, they achieve such flexibility only by unnecessarily lengthy or complicated notational means.
- 5. They fail to give optimum helpfulness in filing order

8.4 Special classification schemes:

- A special classification system is a very detailed, minutely divided classification, developed for a smaller area of knowledge, say for Social Science, or Economics, or even for Banking eg
 - **Patent classification;**
 - **BLIS.**

8.4.1 patent classification;

- A **patent classification** is a system for examiners of patent offices or other people to categorize (code) documents, such as published patent applications, according to the technical features of their content.
- Patent classifications make it feasible to search quickly for documents about earlier disclosures similar to or related to the invention for which a patent is applied for, and to track technological trends in patent applications.

8.4.2 BLIS

- **Bliss Classification**, also called **Bibliographic Classification (BC)**, bibliographic system devised by Henry Evelyn Bliss, of the College of the City of New York, and published in 1935 under the title *A System of Bibliographic Classification*; the full, second edition appeared in 1940–53.
- The system is utilized most extensively in British libraries. Characterized by liberal cross-references, it is primarily a bibliographic tool that aids in the organization of special subject fields.
- Arranged into 35 main classes, consisting of 9 numerical and 26 alphabetical classes, it has a notation system utilizing uppercase and lowercase roman letters, with Arabic numerals for major fixed categories or common subdivisions.
- Commas and apostrophes separate adjacent letters or groups of letters that, when combined into a single class mark, might be read as a single unit; they also avoid confusion of letters for numbers (e.g., 5 for s, 2 for z).

9. Classifying web based resources.

- Classification experts and librarians have long recognized the potential of library classification schemes for improving subject access to information
- In a 1983 article, Svenonius describes several uses for classification in online retrieval systems, including the following:
 - (1) to improve precision or recall,
 - (2) to provide context for search terms,
 - (3) to enable browsing, and
 - (4) to serve as a mechanism for switching between languages.
- In the Dewey Decimal Classification (DDC) Online Project (Markey and Demeyer 1986), Markey demonstrated the first implementation of a library classification scheme for end-user subject access, browsing, and display

Characteristics of DDC and LCC schemes that make them suitable for providing subject access to Internet resources.

- i. General classification schemes, with
- ii. hierarchical structures and notation that orders classes
- iii. They contain links to other subject schemes, and
- iv. links to translations in other languages
(presently DDC only)

Additional improvements to DDC and LCC schemes in providing subject access to Internet-accessible resources.

- i. Evaluate DDC and LCC captions for expressiveness and currency
- ii. Decompose and code class number components to identify the specific subject and aspects represented
- iii. Continue to add new terminology as index terms even if each is not supplied with its own number
- iv. Expand links to other controlled vocabularies
- v. Expand definitions of literary warrant to include Internet resources
- vi. Build demonstration systems

10. Management and evaluation of classification schemes.

- There Twelve Properties of Effective Classification Schemes:
- **1. Reliability:** A classification scheme must be used reliably by different users (inter-coder reliability or consensus) and by the same users over time (intra-coder reliability or consistency).
Reliability will depend on many factors, including the degree of true category differentiation, the adequacy of definitions, the level of hierarchical taxonomic description being evaluated, the adequacy of the material being classified, the usability of the method, the adequacy of understanding of the scheme and method, and the suitability of reliability measurement
- **2. Mutual exclusivity:** Categories should be mutually exclusive on the same horizontal level, so that it is only possible to place subject matter into one category. This relates to reliability. There are varying degrees of mutual exclusivity, since categories often have things in common, or overlap to some degree, depending on the criteria.

10. Management and evaluation of classification schemes.

- **3. Comprehensiveness (or ‘content validity’)**
- It should be possible to place every sample or unit of subject matter somewhere. However, choices must be made about the granularity of categories. Highly detailed classification schemes and classification schemes that offer little granularity suffer from different problems concerning mutual exclusivity, usability, face validity, usefulness, etc.
- **4. Stability**
- The codes within a classification system should be stable. If the codes change, prior classification may be unusable, making comparison difficult. On the other hand, it should be possible to update a classification scheme as developments occur that truly affect the scope and content (e.g., new technology).

10. Management and evaluation of classification schemes.

- **5. Face validity:** A classification system should ‘look valid’ to people who will use it or the results emanating from it. An industry classification scheme should incorporate contextual and domain-specific information (‘contextual validity’), but should also sit comfortably with pertinent theory and empirical data (‘theoretical validity’).
- **6. Diagnosticity (or ‘construct validity’):** A classification scheme should help to identify the interrelations between categories and penetrate previously unforeseen trends. This may relate more to the database and method than the taxonomy itself.
- **7. Flexibility:** A classification scheme should enable different levels of analysis according to the needs of a particular query and known information. This is often achieved by a modular and hierarchical approach. Shallow but wide taxonomies tend to suffer from low flexibility.

10. Management and evaluation of classification schemes.

- **8. Usefulness:** A classification scheme should provide useful insights into the nature of the system under consideration, and provide information for the consideration of practical measures (e.g., for improvement).
- **9. Resource efficiency:** The time taken to become proficient in the use of a classification scheme, collect supporting information, etc., should be reasonable. Continued difficulties in using a classification scheme, after initial training and supervised practice, usually indicate a design problem and signal the need for (re-)testing.

10. Management & evaluation of classification schemes

- **10. Usability:** A classification scheme should be easy to use in the applied setting. This means that the developers should be able to demonstrate a human-centred design process akin to ISO 9241-210. The most relevant aspects of usability should be determined. For instance, some users may have formal training in the use of the classification scheme, little time to make inputs, limited understanding of terms and acronyms, etc.
- **11. Trainability:** It should be possible to train others how to use the classification scheme and achieve stated training objectives, including any required levels of reliability. In some cases, there may be valid reasons to go to only to the original developers for training (e.g., the taxonomy is sensitive or commercialised). In such cases, there is a need to consider why this is the case, and the possible related implications (e.g., lack of peer reviewed, public domain accounts of development; lack of independent testing).

10. Management & evaluation of classification schemes

- **12. Evaluation:** Classification schemes should normally be amenable to independent evaluation. This means that they must be available and testable on the requirements above using an appropriate evaluation methodology. This will of course be more difficult for taxonomies that are restricted for various reasons (commercial, security, misuse prevention, etc).