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BY

MUSA, HUSSAINI PhD

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DEDICATION

This work is dedicated to God Almighty, to my beloved spouses, Mallama Asiya Hassan Baba, and Mallama Sharrifah Habib, and to every member of the family.

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First and foremost, I would like to express my profound gratitude to those whose contribution and assistance to make the dream of writing this book a reality. I wish to acknowledge especially my mentor, an erudite scholar, Prof. Saka Abubakar, who facilitated my inclusion into the teaching of Advance Classification in Library and Information Technology Department. My profound appreciation goes to the Head of Department Dr. Babalola for considering me worth of the responsibility of teaching the course to the Master class of the Department for their various contributions in one way or the other in which has encouraged me to embark on this work through.

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Musa, Hussaini
February, 2024

FOREWORD

I am delighted and honored to provide a foreword for this fine collection of richly informative articles on a wide array of topics within the emerging field of electronic resource management. I think the book will be just as useful to relative beginners as to those like me who have been working in this area for some time.

The book also provides much interest on what might be called the "technical" front, as well. There are, for example, many helpful notes concerning classification systems—as well as excellent discussions of linking technologies and authentication. In addition, there is a nice survey of standards relevant to classification systems that describes and explains the important existing and emerging ones and provides useful ideas about how new standards might further simplify and automate effortless time-consuming tasks. Lastly, many of the notes focus more directly on and discuss possible but achievable library classification "futures"—including one that argues that library classification can and will provide the core or essential functionality for future integrated library systems.

That is quite a remarkable notion, since not many years ago there was a pervasive sense among librarians involved in managing library resources that they were on their own and had to "make things up as they went along!" Now it seems much clearer that there is firm ground to stand on while we deal with our day-to-day management and operational issues, and one of the great strengths of this collection is that it helps solidify that place while contributing a basis for intelligent discussions and planning for the future. That is no mean accomplishment!

I, therefore, heartily recommend it to Library and Information Science students teachers, and practitioners of the library and information science profession

Assoc. Prof. Habib Mohammed PhD
HOD LIBRARY AND INFORMATION SCIENCE
AHMADU BELLO UNVERSITY ZARIA,
KADUNA STATE, NIGERIA

PREFACE

This book looks at classification, a fundamental subject in traditional librarianship. It is common to regard classification as a subset of cataloguing and indexing, and there aren't many fundamental textbooks that focus only on the theory and application of resource classification.

This book makes a modest effort to restore some equilibrium. The goal is to demystify a difficult subject by offering a solid theoretical foundation, helpful guidance, and encouragement of practical skills.

A significant work in a branch of librarianship that has received very little attention from writers is in Classification. Although this subfield of librarianship has been covered in a variety of ways in numerous works, I will boldly state that notwithstanding or as one of the courses in university and polytechnic library and information science programs. A complete book on reading in classification is scarce. This always leaves a knowledge gap, which this effort is well-positioned to close. The author of this book has done a great job of presenting a very engaging perspective on the teaching, learning, and study of classification services, which will greatly aid the library profession in shaping the technical operations and services that students, teachers, and especially practicing librarians provide in libraries.

The book is divided into ten chapters, each covering various aspects of library classification. The first chapter introduces the nature of knowledge organization and its purpose, while the second chapter focuses on subject analysis techniques, classification of simple and compound subjects, and methods of retrieving subjects. The third chapter discusses the construction of catalogs, resource descriptions, access, AACR, descriptive cataloguing exercises, MARC and OPAC, authority control, and authority files. The fourth chapter covers indexing, thesaurus, document indexing, word-based indexing systems, natural language, and hierarchical controlled vocabulary. The fifth chapter discusses classification schemes and subject heading lists, such as LC and LCSH or DDC. The sixth chapter discusses subject heading lists, their utility, limitations, and evaluation criteria. The seventh chapter discusses the Library of Congress Classification Scheme, its history and development, its structure, and its application in academic libraries. The eighth chapter explores the Dewey Decimal Classification (DDC) scheme, its strengths and weaknesses, its international appeal, and its treatment of African topics. The ninth chapter explores the Universal Decimal Classification (UDC) scheme, its use in science and technology, and its advantages and disadvantages finally, Chapter Ten

covers two special classification schemes; the Moys Classification Scheme, its basic structure, and the National Library of Medicine classification.

Reading in advanced classification in Libraries is written in simple English for easy understanding and is highly recommended to students of librarianship, lecturers of Library and Information Science, libraries, and practicing librarians.

Musa, Hussaini
April, 2023

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CHAPTER ONE

ORGANIZATION OF KNOWLEDGE

Combining different information sources increases knowledge (Ortega, 2013). Understanding information that has been imparted to us and applying it to learn problem-solving techniques generates knowledge. A person gains knowledge in the form of facts and other information, and their comprehension of information enables them to apply their newly gained knowledge to solve problems.

There are two types of knowledge: explicit knowledge and tacit knowledge. The knowledge that is difficult to transfer to another person, like the ability to perform a skill that is unique to an individual, is known as implicit knowledge.

Explicit knowledge is information that can be readily transferred to others without the need for special training.

Power comes from knowledge, which is derived from a comprehension of information, which is realized by giving the interpreted facts a meaning (Mazzocchi, 2020).

A more profound interpretation of knowledge is the assessed kind of information that has been comprehended, integrated into one's mind, and integrated into one's life experiences. The acquisition, accumulation, and application of knowledge in one's daily activities results in the behavior of that individual. When information is applied properly, godly, and with fear of God, it becomes wisdom. Therefore, acquiring knowledge involves properly using information and experience. However, when knowledge is misused, particularly by conceited and self-centered people, the outcome is invariably disastrous.

Information can be preserved for future generations. It is stored in a variety of formats, including books (which are an advancement over scroll, vellum, parchment, tablets, etc.), CD-ROMs, cassettes (video and audio), films, graphs, drawings, maps, atlases, USB drives, the internet, and more. These

informational mediums must be arranged to make them easily accessible to intended users. Thus, knowledge organization is a way to classify information across various mediums so that people may easily access it.

The field of library and information science is where the word "knowledge organization" originated, circa 1900. About 1900, Richardson founded the academic area of knowledge organization (Hjorland, 2008). Henry Bliss' work, Organization of Knowledge and System of the Science, followed, emphasizing that the categorization of books should be predicated on knowledge organization.

The entirety of the processes involved in characterizing documents, categorizing, indexing, cataloguing, and organizing knowledge sources—such as books, databases, audiovisual materials, archives, and other information sources—is known as knowledge organization. According to Gnoli, (2020), knowledge organization is the process of describing documents, including their contents and features, and organizing these descriptions in a way that facilitates user access to the documents. Information specialists, librarians, and subject specialists are examples of experts who organize knowledge. Liebowitz and Beckman, (2020) state that to organize this knowledge, librarians and information workers must receive training in the field of library and information science programs. Subject analysis, controlled vocabularies, indexing, abstracting, cataloguing, classification, and bibliographic organization are the topics covered in these courses and programs.

Purpose of Knowledge Organisation

Subject headings, semantic networks, word listings, classification schemes, and knowledge maps are all included in the knowledge organization system. These knowledge organization activities serve the following purposes:

To instruct information users on how to find, explore, and conduct direct searches by utilizing search engine sites or a webpage's themes.

To allow collection organizers to respond to inquiries about the range of topics covered by their collections.

To arrange information resources for simple retrieval, access, and collection management so that interested parties can quickly identify them.

The visual tool used to locate knowledge within an establishment or organization is called knowledge mapping. When you require their knowledge, it points you in the direction of experts. Along with people and databases, the knowledge map also points you in the direction of papers.

To put it simply, a knowledge map aids in identifying individuals within an organization who possess advanced expertise in a certain area.

According to Rowley and Farrow, (2000), the categorization of information resources is necessary for the following reasons:

1. Organisation or classification of information resources brings materials on the same subject together. This will aid users in easily retrieving needed information.
2. The organisation of information or knowledge shows the closeness between subjects. For example, Mathematics is a subject that is divided into various branches such as Algebra, Arithmetic, Geometry, and Calculus. These branches are related to other fields like physics, chemistry, and other sciences. So likewise, computer science has other branches such as algorithms, computer security, computer graphics, computer architecture, and databases. These branches are related to other fields like mathematics.
3. Classification ensures the orderly arrangement of information resources on the library shelves.
4. Library professionals employ a classification scheme that enables the use of notation to represent subjects thereby making it easy for library users to identify and locate the needed information resources.
5. It aids in the compilation of bibliographies.
6. It allows for the addition of new books to the library collection. At intervals, libraries acquire new information resources and classification of

these materials helps in adding these newly acquired resources to the library's existing collection.

Cradle of Knowledge Organization

Organization is as old as creation. God started it when he commanded, "*Let there be light*!" in a dark world. The light illuminated the dark surface. He separated the *light* from the *darkness*. In other words, God separated the *light* from *darkness* and showed each of them where to stay. He (God) also separated water from ground and land from water. This may be argued as an organization but not an 'organization of knowledge' because human-recorded knowledge existed at this time as far as the account of creation is concerned

Cradle of Library Classification

Aristotle in his philosophical nature posited that the most striking aspect of nature is CHANGE. He used sculpture to show what he meant. A sculptor uses clay which is his MATTER and acts on it to give it a FORM, an object. Change occurs when an object/matter takes a form or a new form or shape. Four things happen in this process namely:

1. Material: This is the matter. In the case of a sculptor, it is the clay. The material with which the object is made.
2. Efficient: This depicts the activity of the sculptor on the material. The sculptor takes action, that is, performs activities on the matter to change its present state to another.
3. Formal: The activity performed on the material gives it a different shape from the original. This results in the form the object now assumes. The form it molded.
4. Final: This is the appearance of the molded matter. The plan or design in the sculptor's mind is achieved. This makes the sculptor happy that he has achieved his aim.

This is precisely what happens in cataloguing and classification. The materials to be cataloged come in different formats and contents which makes seemingly the same materials have different class numbers. Study the four stages of Aristotle's philosophy in change and note its application in cataloguing and classification.

Crude System of Classifying Materials

The first question that comes to someone's mind would be what is the purpose for the classification of materials? The reason for classification is to group materials according to their likeness. Sounds simple doesn't it? In library and information science classification is defined as a systematic way of arranging information materials for easy accessibility and retrieval by those who need them. To make the definition simpler and elaborate, classification could be defined the way Tiwari, (2012) puts it thus:

Classification is the systematic arrangement of objects, ideas, books, or other items that have like qualities or characteristics into groups or classes. The like characteristics may be size, color, type, form, content, or some other features.

This definition gave a simple guide to the classification of materials but there is more to it. A further expansion of this definition may lead to giving examples of each characteristic for clearer understanding.

1. **Size:** Size is how big or how small a material to be classified is. Size determines the nature of classification, especially on where the material would be kept. The size of a material has nothing to do with the content of the material. Big-sized books, for instance, are not normally kept where normal-sized (8 inches to 15 inches) books are kept. The shelves where the books are kept have suitable sizes even though some of them are adjustable but the adjustment has a limit. One should not also rubbish aesthetics. Books or book materials that are excessive in size have a designated place for them indicated on the call number of the book from the catalogs. The same applies to materials that do not qualify as books, those that are tiny in size. In this case 5-10 of such may be kept in a box.
2. **Colour:** Colour is "a phenomenon of light (as red, brown, pink, or gray) or visual perception that enables one to differentiate otherwise identical objects" In higher institutions and government libraries colour does not play a prominent role, although it does, in classifying materials in kindergarten and in primary or elementary schools. Colour could be used to differentiate one document from the other. Librarians in school libraries understand this better.

3. **Form:** This is another principle used in classifying objects. It was very popular during the early stages of the book trade. Before the advent of paper as a canvas to receive inscription many other writing materials had been in existence. These include parchment, papyrus, vellum, tablet, tortoiseshell, bark of trees, scrolls, etc. These are forms of the document and are used to denote the object. In this case, it is not the content but the format in which the content is presented. Under this form also are manuscripts, incunabula, and handwritten materials that are important for posterity.
4. **Type:** At the beginning of library collections, materials are grouped into two major systems. It is either religious or secular. Religious books and books of rules and regulations by kings and queens were very popular. So the early libraries which were owned by either ruler, people in authority, or religious groups classified their collections by tagging them "Secular" or "Religion". As long as the material is not depicting religious ideas it is secular.
5. **Content:** Content has to do with what is written in the book or work. What readers are meant to understand in the work is of important than the colour or form. This is what the modern classifiers use – the content of the work. Other characteristics may also apply to know where the material could be physically kept. Where the material is kept, that is the location of the material does not affect its content. The classification mark is given using the content of the work.
6. **User**: Users of materials can affect the classification mark and the physical location of any material. Any classification system has main classes and subdivisions of those main classes; and even sub-subdivisions to a fifth or more degrees. Depending on the users a cataloguer may not go into details. The way a cataloguer classifies books for primary school users may not be the way he would classify the same book for tertiary institution students' users.
7. **Language**: The language used in writing a document could be used to group the items. In this case, the cataloguer groups the items according to the language in which the document is presented before regrouping according to content. Items in English language, Latin, Greek, French, German, Spanish, Swedish, Norwegian, and millions of vernacular

languages are separated from each other. Nowadays, materials are generally classified according to the content and form in which they are presented therefore, language, user, and colour play little or no role in library classification.

Principles or Rules of Library Classification

i. **Class the work according to the subject treated.** The first duty of a classifier is to determine the subject of the document to be classified. Cataloguing and classification are inseparable duties of a librarian and most of the time they are done by the same person or by persons in the same technical section of a library. So they are used interchangeably in many libraries. The subject of a book is the core course the book treats. In this case, it could be English Language, Mathematics, Geography, Biology, Chemistry, Physics, Religion, History, Library Science, Accounting, Commerce, etc. or any branches of those subjects

ii. **Form of presenting subject matter**. Every subject may be presented in different forms. There are textbooks (monographs), dictionaries, encyclopedias, periodicals etc. Almost every book has these four forms. There are dictionaries of some subjects e.g. dictionary of Mathematics, dictionary of Economics, dictionary of Library Science, etc. There are encyclopedias of Mathematics, encyclopedias of Computer Science, encyclopedias of Library Science, and so on. There are also periodicals on many of the subjects that exist. These are the forms in which the subject is presented and the form affects the classification mark to assign to the document. After the determination of the subject of any material, the next step will be to determine the form of its presentation.

iii. **Class the work where it will be most useful.** There are books that a classifier sees as not belonging to any one specific area of location. For instance, in a university where you have studies in medicine, physiology, nursing, public health, and other related sciences and the library acquires a physiology book, where will the book be kept? What class number will be assigned to the book? Where is the place where the book will be most useful? This may be a hard decision to make but an important one.

iv. **Place the work in the specific subject division rather than the general subject area.** Classification schemes have 'specific' subject numbers for

specific subject areas. There is a number for Arithmetic. There is one for Algebra. There is a different one for Geometry. There is a specific number for Trigonometry. All these mentioned courses are in Mathematics but if, the book is on Trigonometry the number for Mathematics, which is too general, should not be applied to it.

v. **Place a work that treats more than two subjects in a broad subject area.** The example given above applies. In the case of a book that treats Algebra, Arithmetic, and Geometry one cannot classify it as any of them. In other words, the class number to be assigned to that book should not be the number for Algebra or the numbers for Arithmetic nor will it be the number for Geometry. An all-inclusive class number should be assigned to the book. In this case, the appropriate class number for it is Mathematics because; it embraces all the three subdivisions of Mathematics. So a book that treats more than two subject areas must be classified in a general subject area that can accommodate the different subjects.

vi. **A work that treats two subjects unequally.** If two subjects are treated in a book, class the book on the prominent subject treated. Irrespective of the first one that the book dealt with, the work must be classified under the subject that is treated more than the other. The simplest way to know this is by determining the number of pages covered by each of the subjects treated in the book.

vii. **If a coordinate situation, place on the first treated.** A coordinate means when two subjects are given equal attention. When the number of chapters or pages covered in the book is almost equally shared by the two subjects. In this case, use the first subject treated to classify the book. The second one will be taken care of under added entries. The same applies to the other ones especially number five.

For example, a book entitled 'Windmills and Watermills' should be classified with "Windmills" since windmills are the subject mentioned first. The secondary class numbers should be "Water Wheels/Watermills

viii. **Avoid placing materials in the nature of criticism.** If there is a book that treats the pros and another treats the cons, the two books should have the same number because they are of one subject. A book treating the

advantages and disadvantages of any subject should be seen as the same subject and classified as such.

ix. **In determining the subject of a book, consider the predominant tendency of the author and the obvious purpose of the book.** The intention of the author or the profession of an author is a clue to the angle from which the author is writing. When the mind of the author is deciphered, it becomes easy to know where to class the book. This is where a Classifier puts on his or her thinking cap. Classifiers should not compromise content.

x. **Index all decisions made outside of the use of the classification scheme.** There are materials that a scheme that is being used may not have a specific place to classify them. In this case, the classifier is given a set of alternatives to choose from. When a choice is made as to where to class the item, for the sake of those who were not there when the decision was made, a note should be made to inform others. This is what is meant by creating an index. Document what you have done. Let it be visible and glaring to the incomers, otherwise same documents may be classified differently.

Library classification is the process of arranging the resources of a library in a logical order, from the general to the specific, based on the main subject of a resource. The fundamental purpose of this process is to facilitate the retrieval of the required information, i.e. to lead the user to the required book, map, or other type of resource.

CHAPTER TWO

TECHNIQUES OF SUBJECT ANALYSIS

Subject Analysis

This is the process of analysing the subject content of an item before translating this conceptual analysis into the 'language' of the classification scheme (to assign a classification number) or the subject heading list (to assign subject headings). The level of subject analysis required for assigning a classification number and subject headings to an item is summarization. Unlike subject analysis that is deep and exhaustive (e.g. for back-of-the-book indexing), this is subject analysis at a superficial level. It involves reducing the subject content of the item to 1–3 terms.

Ranganathan set forth five categories or facets for determining subject content or "aboutness": time, space, energy, matter, and personality. \He called this the PMEST formula:

Ranganathan stated that hierarchical classification schemes like the Dewey Decimal Classification (DDC) or the Library of Congress Subject Headings are too limiting and finite to use for modern classification and that many items can pertain information to more than one subject. He organized his classification scheme into 42 classes. Each class can be categorized according to particular characteristics, which he called facets. Ranganathan said that five fundamental categories can be used to demonstrate the facets of a subject: personality, material, energy, space, and time. He called this the PMEST formula (Sharma, 1979):

- Personality is the most specific or focal subject.
- Matter is the substance, properties, or materials of the subject.
- Energy includes processes, operations, and activities.
- Space relates to the geographic location of the subject.
- Time refers to the dates or seasons of the subject.

Subject analysis in CC consists of evaluating information packages to determine a value or values in one or more of these categories. In a useful example, Ranganathan explains metaphorically how items are arranged in his scheme according to facets.

We shall imagine all the "Literature" books divided according to their languages and we shall imagine a separate building for the literature of each Language. A reader, interested, say, in English literature will have to go into the "English" building, so to speak. On entering the building he will find that all Poetry is put in one room, that all Drama is put in another room, all Fiction is put in a third room, and so on. Let us assume that the reader is interested in Drama and that he enters the "Drama" room. There we may imagine that he will find several cupboardseach devoted to a Dramatist. If the cupboard, about any Dramatist, is opened, he will find that each shelf is devoted to one work of the Dramatist. On that shelf, all the editions of that work and all the criticisms of that work will be found arranged in a convenient order

Subject analysis—one of the most intellectually challenging aspects of information organization—is part of cataloguing that deals with identifying and describing the intellectual or artistic contents of an information resource. Why do catalogers perform the subject analysis? Comparable to the goals of descriptive cataloguing, it is carried out to enable users to find, identify, select, and obtain resources, and to navigate within library catalogs. Specifically, it is performed to:

- **Identify The Subjects Of Works**

By performing subject analysis, catalogers formally associate specific topics with works. The process results in concise subject statements (e.g., subject headings and call numbers) that briefly describe the resource. These subject statements allow users to evaluate and select the resources that best meet their needs.

- **Find Works According To Subjects**

Users may not always know what resources they need or which authors to read, but they typically know which topics or subjects interest them. By performing subject analysis, catalogers provide users with the ability to retrieve individual

resources in library catalogs by matching those concise subject statements against users' search strings.

- **Collocate Works Of A Like Nature**

Subject analysis allows for finding not only individual resources but also sets of resources. Assigning subjects to works creates shared-characteristic relationships among individual resources that are about the same topics. This allows the catalog to bring together (i.e., collocate) materials of a like nature. If users conduct a subject search for a particular topic, their search results will include all the resources in the catalog containing that subject heading. Or if users retrieve a resource that meets their information needs through other means (e.g., keyword searching), they can click on relevant subject links to find all the other resources on those topics.

- **Provide A Logical Location For Similar Resources**

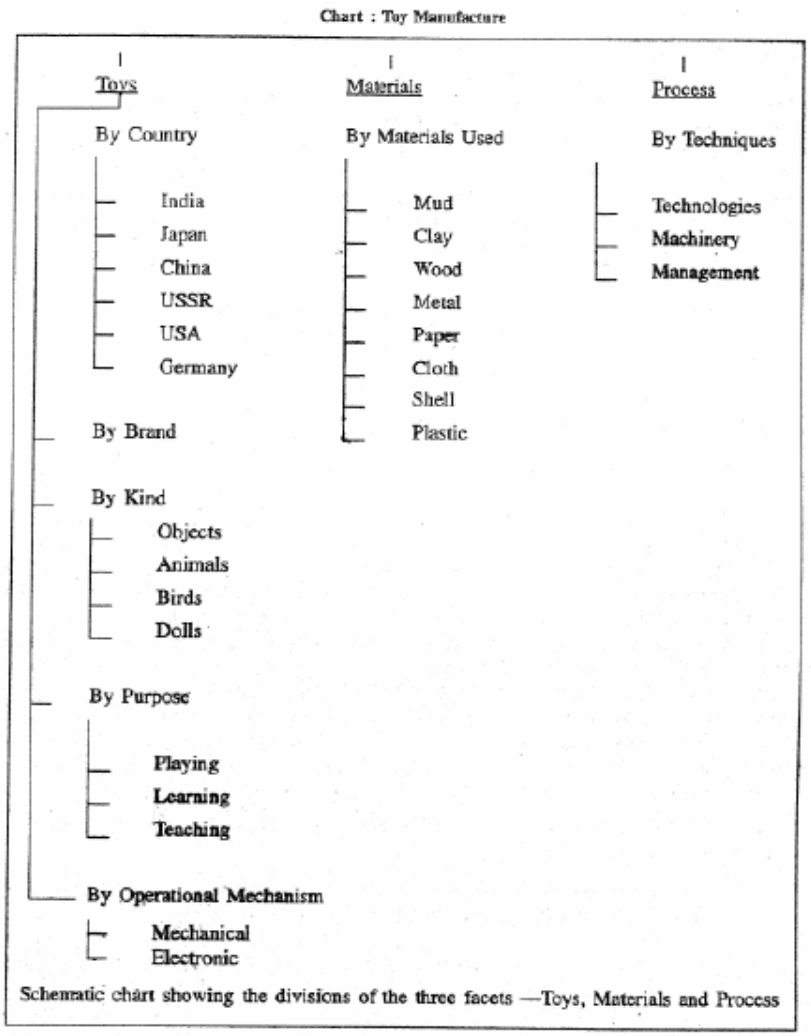
Collocation not only occurs in catalogs but also in the stacks. Classification is another way that materials are collocated. Subject analysis allows resources with identical or similar subjects to be shelved together based on their call numbers (i.e., a classification number plus a Cutter/item number).

- **Save The Users' Time**

In the spirit of S. R. Ranganathan's fourth law in his Five Laws of Library Science, subject analysis helps to save time. It helps users winnow away thousands, hundreds of thousands, or even millions of resources in the pursuit of needed information. If there were no subject analysis, to understand what a resource is about, users would rely on titles, words from tables of contents (if present), and other descriptive cataloguing data, which are not always the most reliable indicators of subject matter. This would be a time-consuming process. Or users would have to rely on full-text access, if it were available, which comes with its host of problems, including infoglut (i.e., information overload). Subject analysis makes finding resources on a given subject and understanding the nature of the resources both easier and more efficient.

Subject Analysis

A facet is an aspect of a subject. Facet analysis means an analysis of a subject into its characteristics obtained on the foundation of a systematic application of a set of features. Facet analysis of a subject results in the formation of clusters of classes. Let us show this with an instance: In analyzing the subject of Toy Production, we can discern that Toys, being the ultimate product manufactured, is one of its facets; the **Materials** used in the creation of toys is another facet and the **Procedure** of manufacturing toys is yet another facet. Therefore, the Toys facet will include several clusters and subgroups; the same is the case with the **Material facet** and **Procedure facet.** The chart 1 given here will further clarify this: Chart 1. Toy Production



Schematic chart showing the divisions of the three facets —Toys, Materials and Process

So far we have explored subject analysis at quite an abstract level, concentrating on citation order and expression of notational elements or facets. Here a much more practical approach is used. Many new items in the library will have already been classified by a national agency such as the British Library and class numbers will be easily verified through database checking. However, this will not apply to all materials, and in any event, local needs may suggest an alternative location. At the very least, remotely assigned classifications should be checked. The first question any classifier should ask when adding materials to a library collection is: 'What is this about?' The second question is: 'Where will our users expect to find this?'

Subject Analysis Process

Subject analysis comprises two principal activities: (1) conceptual analysis and (2) translation. The process begins with an examination of the physical carrier and an analysis of the intellectual content of the resource.

This conceptual analysis is done to determine what the work is about (i.e., its subject matter), but also to understand what the work is (i.e., its form or genre). In the case of visual materials, it might also involve identifying what the image is of (i.e., the chief elements of an image). For example, a cataloger might identify that a particular resource is about mass consumption and mundane consumerism, that it is a print of an artwork, and that it is of 32 cans of Campbell's Soup. These facets of analysis are sometimes individually referred to as aboutness, is-ness, and of-ness. In this chapter, for the sake of brevity, all three facets are subsumed under the term aboutness unless otherwise noted.

Joudrey, in his dissertation research, found that a group of untrained analysts used multiple approaches to aboutness determination, and also used various strategies for examining resources. Each participant in Joudrey's study used a different combination of techniques to gain an understanding of aboutness. These findings led to the conclusion that there is no single analysis method that will work for everyone for every resource. Although there is no "correct" way

to determine aboutness, a suggested method is presented in Taylor and Joudrey's Organization of Information. The book provides an overview of aboutness-related challenges, strategies, and approaches. It offers guidelines on what to look for when performing conceptual analysis. It also includes, in Appendix A, a work form that lists steps to follow and concepts to consider in the process; the work form is accompanied by an illustration of its use.

Even though there is no one approach to conceptual analysis, there are some suggestions that help to ensure that aboutness data can be found. For example, when examining a resource, one should, at least, inspect the following components:

- Physical carriers
    - the item itself
    - covers, jackets, labels, etc.
    - containers, cases, etc.
- Visual information
    - cover art and other design elements
    - illustrations, photographs, prints, etc.
    - diagrams, tables, charts, etc.
- Bibliographic and/or document features
    - title pages, other preliminaries, opening screens, homepages, title bars, page sources, etc.
    - tables of contents, chapter titles, section titles or headings, hyperlinks, etc.
    - introductions, prefaces, forewords, summaries, abstracts, etc.
    - conclusions, concluding paragraphs, final sections, final sentences, etc.
    - end features such as indexes, appendices, and bibliographies, as well as site maps, credits, etc.

In addition to examining the physical aspects of a resource, the process entails analyzing the content. Whereas the process begins with a search for main topics and genre/form (and of-ness, if applicable), one is also looking for the overall discipline or branch of knowledge; names of persons, families, and corporate bodies featured heavily in the content; the names of jurisdictions, geographic areas, or geographic features that play a significant role in the content, either as a main topic or as context; the names of other entities, concepts, objects, and events; as well as periods or other chronological elements. One might also be on the lookout for purpose, audience, point of view, language, tone, methods used to create the content, and intellectual level if they notably affect the content.

Over the years, several approaches have been offered for examining content. Patrick Wilson identifies four approaches in his seminal work, Two Kinds of Power: An Essay on Bibliographic Control. These and other approaches to analyzing content are discussed in more detail in The Organization of Information by Taylor and Joudrey. Two other works that are also helpful for someone faced with the need to determine aboutness are Documentation: Methods for Examining Documents, Determining Their Subjects and Selecting Indexing Terms published by the International Organization for Standardization, and Subject Analysis: Principles and Procedures by Derek W. Langridge.

The understanding gained during the conceptual analysis leads to the translation phase. But before jumping directly into a list of controlled vocabulary terms or classification schedules, it is helpful to organize one's thoughts about the resource first. These thoughts should be expressed in natural language as a written aboutness statement to identify: (1) the work's subject matter, (2) relationships among those topics, (3) applicable forms or genres, and (4) other key concepts related to the work (prominent names, geographic areas, time periods, etc.). One or two sentences or a short paragraph beginning with, "This resource is about …" will suffice to summarize ideas and to prioritize words or concepts to be searched in the controlled vocabulary. If one is also classifying the resource, this process may entail determining the disciplines, subdisciplines, topics, subtopics, places (i.e.,

geographic areas in which the subject is set), periods, and genres/forms (e.g., fiction, historical treatment, dictionary) to sketch out a rudimentary hierarchy to assess where the aboutness concepts fall in a classification scheme. A. G. Brown gives an excellent introduction to the process of learning to place one's subject into a conceptual framework necessary for classification.

Once an aboutness statement is composed, then it can be used for the translation phase. The cataloger assigns subject headings from a controlled list of terms, which may have rules for using the list, as is the case with Library of Congress Subject Headings (LCSH), which is discussed in chapter 13, or with the Sears List of Subject Headings, discussed in chapter 14. The cataloger also assigns symbols from the particular classification scheme being used, discussed in chapters 16–20. The subject term(s) most often appear as access points for the resource in the library's catalog. The classification notation is usually used as the basis for a call number for a physical information resource that will determine the position of the resource on the library's shelves.

Challenges In Subject Analysis

Subject analysis is not always a simple task. Either or both of the two principal activities can be taxing. Sometimes conceptual analysis can be rather easy (e.g., examining a standard Introduction to Psychology textbook), but for some resources, the process may take a concerted effort to determine what they are about.

Some resources are quite complex and what they address is not always clear at first. The question "What is this work about?" can have many answers; it depends on who is asking the question, and the answers may be affected by issues such as background, education, cultural identity, and so on. The translation process, following the determination of aboutness, also has its pitfalls. Sometimes, there is an easily found, concise, exact match to the aboutness concept in the controlled vocabulary. Other times, however, the rules for applying the controlled terminology may prevent adding what seems to be a logical subject heading string. This may result in the translation phase becoming a convoluted process that never results in a completely satisfying match. This, of course, may have more to do with the limitations or boundaries

of the individual vocabulary itself. To facilitate the process as much as possible, some aspects of subject analysis should be kept in mind.

Before analyzing resources, one must have a clear idea about the level of exhaustivity that is to be applied.

Exhaustivity is the number of concepts that will be considered. Brown identifies two basic degrees of exhaustivity: depth indexing and summarization. Depth indexing aims to extract all the main concepts dealt with in an information resource, recognizing many subtopics and subthemes. If one is doing depth indexing, then many topics that are covered in only small parts of the resource will be noted. Summarization identifies only a dominant, overall subject of the resource, recognizing only concepts embodied in the main theme. In library cataloguing, traditionally, subject analysis has been carried out at the summarization level, reserving depth indexing for other enterprises such as periodical or back-of-the-book indexes. A good rule of thumb for the summarization approach—based on a policy associated with the application of LCSH—is that any topic representing approximately 20% of a resource should be identified in the aboutness statement.

Determining what a resource is about at the summarization level can be a difficult matter. Charles A. Cutter's statement of the basic functions of a catalog was quoted, including "To show what the library has … on a given subject." This implies that it is obvious what being "on a given subject" means.

Wilson has discussed this matter at some length and has suggested that part of the problem is that catalogers and others are taught to look for the subject of a resource. He observes that if a person is writing a book or paper, and you ask what the person is writing about, he or she can tell you. If you go further and ask what is the subject about which the person is writing, this seems to be an equivalent question; but using the definite article in front of the subject implies that there will be just one thing to mention in answer to the question. Wilson's further explication demonstrates the fallacy of this assumption. Although some information resources seem to have an easily determined subject that may not always be so. Some examples might help to illustrate this point.

- A work titled History of Mathematics is about the discipline of mathematics, but it is more specifically about mathematics from a historical perspective. It is not, however, about the discipline of history; it is in the form of history. This distinction has a certain subtlety that is learned through education in our present-day Western tradition. It is possible that in another place or another time history would be considered to be the subject of anything historical, regardless of the specific topic of the work.
- A website for an event, a project, or an organization, such as Planned Parenthood, can be complicated.

On one hand, if you ask what the subject of the website is, there is a simple, clear answer that could suffice: it is about the corporate body entity Planned Parenthood Federation of America. Is this useful and completely satisfying? No, probably not. Though the website is about the organization, it is also helpful to highlight some of the topics that are addressed by the organization. One assumes that if a user is interested in an organization, an event, or a project but he or she does not know the name of that entity, then this user will attempt to find it through terms reflecting the organization's activities, roles, interests, or services. Terms reflecting these will be necessary in describing this resource. So, in some cases, catalogers may need to describe multiple levels of aboutness (i.e., the subject of the subject). For the Planned Parenthood website, in addition to a subject access point for the organization itself, a cataloger may include concepts such as birth control, reproductive or sexual health, family size or family planning, and community health services.

- Let us take another example, Nature in Italian Art: A Study of Landscape Backgrounds from Giotto to Tintoretto.

This work is about landscape painting—specifically in Italian art during a set period. Is it about Italian art? In the very specific sense of the subject, no—it is much more specific than Italian art. But who is to say that it would not be useful to someone searching for information on Italian art? Is it about Giotto and Tintoretto and all the landscape artists in between? Yes, of course it is, and if one were doing depth indexing, each one of those artists would be indexed; but if one is looking for the subject, a listing of names of numerous artists will not do.

In some cases, the subject of a work may take effort to uncover. Determining aboutness may depend, to some extent, on specialized knowledge or the ability to quickly grasp unfamiliar material. Some resources may be very general in nature (e.g., a set of encyclopedias), some may not have an obvious topical thread (e.g., a collection of short stories by Bostonians about anything or nothing), some may be very involved (e.g., a doctoral dissertation on a highly technical complex topic), and some may never overtly state exactly what they are about. In these situations, the cataloger must interpret what the resource is about from the information that is presented. One must remember, however, that aboutness is more than just the sum of a work's parts (i.e., individual sentences, paragraphs, or chapters). For example, many people could read a list of names that includes Giotto and Tintoretto but not know that it is a list of Italian artists, not to mention that they were landscape painters. Moreover, a person could read and understand each sentence in Foucault's Order of Things: An Archaeology of the Human Sciences but still not understand what the writing as a whole is about. The determination of aboutness depends greatly on a cataloger's intellect, knowledge, judgment, attentiveness, analytical skills, and interpretive skills. Henry Evelyn Bliss has discussed this problem:

If [a] book on Scotland is not mainly geographic and historical but consists of descriptive and narrative chapters together with a mélange of literary and scientific observations and reflections on the national traits and institutions, also considerable social philosophy in the last chapters, the judgment Bliss sees a complex problem that requires judgment. On the other hand, W. C. Berwick Sayers, when faced with this same example, quipped, "But surely, from first to last, this is a book on Scotland." It all depends on who is asking and answering the question, "What is this work about?"

By now, it should be fairly obvious that catalogers themselves play a role in determining the aboutness of some resources. Despite the best efforts of those involved, subject analysis is never going to be an altogether objective process. Even with the most straightforward materials, the process "can only be performed through the lens of the analyst's background, knowledge, culture, responsibilities, and even mood …. [It is] a highly subjective, interpretive process that is dependent on human skills of observation, interpretation, and

analysis." Whereas objectivity—or more accurately, neutrality—is certainly something to strive for, human beings are the ones performing these analyses. Although humans bring tremendous assets to the process (reading between the lines, finding deeper meaning, understanding subtext, appreciating nuance, etc.), they also can bring preconceptions (conscious or otherwise), inconsistency, cultural and societal biases, educational backgrounds, emotions, and so forth. Though the process is an interpretive one, and therefore somewhat subjective, as long as it is approached with knowledge of the potential pitfalls and more than a modicum of self-awareness, it is hoped that catalogers will be able to embrace a position of impartiality and balance by using good cataloger's judgment and by reining in their more obvious preconceptions, prejudices, and antipathies.

Because it is difficult to define what "on a given subject" means, and because determining aboutness depends upon the indexers or cataloger's knowledge, opinions, experiences, and judgment, Marcia Bates has observed, "it is practically impossible to instruct indexers or catalogers [on] how to find subjects when they examine documents. Indeed, we cataloguing instructors usually deal with this essential feature of the skill being taught by saying such vague and inadequate things as 'Look for the main topic of the document.'"

The goal of **subject cataloguing**, according to the Sears list of subject headings (1994: xiii), is to "list all items on a specific subject that a library holds in its collection under one uniform word or phrase." The concept behind subject cataloguing is that consumers of big libraries, such as academic and research libraries are unlikely to remember the author or title of a document. Rather, they're looking for documents about a certain topic that a user is researching, learning, or writing about (Aina, 2004). As a result, cataloguers assign subject headers to every document cataloged in that library, allowing users to find books on certain topics.

A work can often be classed in more than one discipline, which is something that consumers should be aware of. A work on employee psychological testing, for example, might be classed as psychology at 153.94 or management at 658.31125 using DDC. However, if the material is meant for psychology students and scholars, it should be listed with other psychology texts. If the book's

intended audience is business administration students, however, it should be grouped alongside other management texts. It is vital to underline that the user's needs take precedence over all other factors. This emphasizes the importance of a classifier's subject knowledge as well as a deep understanding of the demands of the collection's users.

Classification of Simple and Compound Subject Documents; types of subjects

Categorisation of subjects can be done in two broad ways: by scope and by structure

Types of Subjects by Scope

By scope subjects can be categorised into 4 types:

i. **Broad Subjects:** These are subjects that cover broad subject areas. They usually form the main classes of major classification schemes. They include such subjects as Languages, sciences, social sciences, technology, etc.

ii. **Basic subjects:** These are subjects found within broad subjects. E.g. within social sciences, the basic subjects include economics, political science, etc. Within sciences, the basic subjects include mathematics, biology, chemistry, etc.

iii. **Derived subjects**: These are subjects derived from the basic subjects. For instance, biochemistry is derived from biology and chemistry; geophysics is derived from geology and physics.

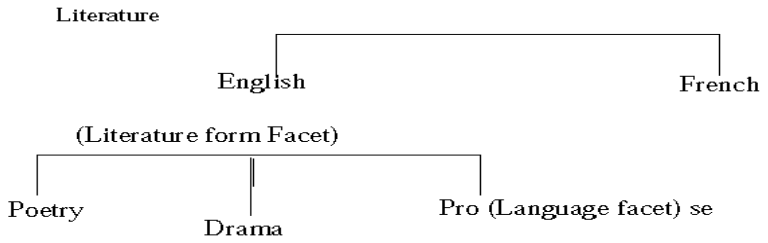
iv. **Mono subjects**: These are subjects that are centered on one issue with little or no room for breakdown into further subjects. They are regarded as the smallest unit of subjects e.g. research, classification, newspapers, tables, etc.

Types of Subjects by Structure

There are 5 forms of subject found in literature: simple, superimposed, aggregate, compound, and complex subjects.

1. **Simple Subject:** - These are subjects that have only one thing and characteristic. E.g. banking, cataloguing, chemistry, and election.

2. **Superimposed Subjects:** These are subjects consisting of two simple subjects from only one focus i.e. reflecting only one facet e.g. English literature is a simple subject since it has one facet (language).
3. **Compound Subject:** - These are subjects made up of several simple subjects from more than one focus. When a subject consists of more than one focus from the same main class. E.g. 1: English poetry is a compound subject because it combines two foci, one from the language facet and the other from the literary form facet e.g.



E.g. 2: Expatriates Teachers is a compound subject because it combines two foci from two different facets in the same main class (Education). The two foci are teaching and teachers both in education

4. **Complex Subject or Phase Subject**: - A subject could be said to be complex when it contains foci from more than one main class e.g. the influence of Christianity on English literature. This contains two foci from two different main classes: religion and literature.

Simple and compound subjects create little or no problems in classification. Complex subjects create problems because of their phase relationship (their relationship with other subjects).

Phase relationship is the interaction of a main class with another. A phase is the part of a complex subject from one main class e.g. "influence of Christianity" is one phase while "on English literature" is another phase.

Determination of subject: 'What is this about?'

No classifier has unlimited amounts of time for subject analysis and classification of materials. In the workplace, classifiers have to develop skills that will enable them to accurately and quickly determine the subject of a new acquisition which will ensure it is shelved in the correct place among existing

items. Experienced classifiers no longer have to think about the complex analytical process they are engaging in. For inexperienced classifiers, there are some simple procedures to follow.

In many cases, the title will not include information about the subject of the work. The title of Stephen Jay Gould's Eight Little Piggies does not immediately suggest a work on evolution. Other title information as given in a subtitle may help to determine the subject, after which chapter and section headings as listed on the contents' page should be scanned. If the nature of the work is still unclear, the brief publisher's introduction on the cover may help in determining its subject. Further assistance or confirmation can be found in the author's or editor's foreword and the introductory chapter. Other sources of information that can be consulted if necessary include publishers' blurbs and reviews.

A **subject heading** is, therefore, a word or phrase which describes nor represents a concept or topic. It provides an access point to a bibliographic record by designating the subject of the work.

In assigning a subject heading to any library document, it is important to be objective while considering the author's intent.

The cataloguer should be able to ask questions such as:

What is this work about?

How many topics are treated in it?

If several, are the topics discussed in relation to each other, or separately?

If separately, is one topic predominant? Which one?

Techniques of Subject Analysis

Key elements in determining the subject content of information resources are through the following means

To prepare subject entries or assign subject(s) for books, the following part of the book has to be critically analysed:

i. Read the title,
ii. Table of contents,

iii. Introduction,
iv. Preface,
v. Author's or editor's foreword & opening chapter,
vi. Publisher's blurbs, and
vii. Reviews of the work in question.

a. ***Title***: The titles sometimes do not expose the content of the document. Also, some of the titles may be subtitle which represents a broader topic. At the time you may not understand the subject of a book by just reading the title. So, using only the title might be confusing. So, you need to go beyond the title in determining the subject content of resources.

b. ***Table of Contents:*** List of the entire topic discussed in the document to be classified. The chapter and subheadings in the chapters may be of great importance in determining the subject heading of a book.

c. ***The Preface or Introduction***: Here the author's purpose of writing the work is presented. The subject of the work is often expressed here.

d. ***Publishers Blurb and reviews***: This appears at the back of the book as the book Jack. A time summary of the subject content is provided there.

e. ***Bibliographical references and index entries*** can also help you to determine the subject.

Subject assignment is an abstraction method that lowers a book's total content to a set of pre-determined subject concepts or subject numbers.

A classifier does not have unlimited time to investigate subjects and classify materials. Classifiers are expected to develop skills at work that will allow them to accurately and quickly determine the subject of new information resources, ensuring that they are shelved in the correct position among other things in the collection. Classifiers with a lot of experience don't have to be concerned about the extremely difficult analytical processes they're performing. Some fundamental strategies can now be used by inexperienced classifiers. When classifying new content, the first place to look is the **title** of the piece. In many cases, this will be sufficient to supply classifiers with all of the data they want.

In a DDC-enabled library, a work named "An Introduction to Psychology" will almost probably be classified as 150. Even in situations that appear to be basic, such as this one, it's a good idea to check the table of contents page. If the table of contents indicates that the material is about educational psychology, the number would be 370.15 rather than 150.

In many cases, the title does not convey any information about the content of the work. The title "The Bay of Pigs," for example, does not immediately convey that the work is about the American Revolutionary War. Consult the library's list of subject headings or thesaurus to identify an acceptable phrase for the predetermined subject matter and to maintain uniformity and consistency.

1. Sometimes, there is a scope note accompanying a subject in the list. Read this note actually to satisfy yourself that the subject is adequate. Also, check if the subject may need geographical or other forms of subdivision.
2. Also examine the "see" and "see also" references (in the SLSH) and the "NT", "BT" and "RT" (in the LCSH) and other terms that describe the book more adequately and accurately.

After taking into consideration necessary factors and making proper judgments, assign subject heading(s) for the document based on the nature and content of the document and what is prescribed in the subject heading list in use. While it might be easy to assign subject(s) to certain topics, others may pose a great challenge to the cataloguer. For instance, a book with the title "Introduction to Librarianship" might have as its subject "librarianship" while a book with the title "History of Libraries in Nigeria" might have as the subject "Libraries – Nigeria – History". However, it is not simple to choose a subject heading for a book when a given concept has a number of different verbal equivalence e.g. storms, cyclones, dust storms, hurricanes, thunderstorms, tornadoes, typhoons, winds.

Methods of Retrieving Subjects

The Title

The title as seen on a title page of a book may or may not be helpful to the assessment of the intellectual content of a book. The book, *Fire Your Boss* by

Stephen M. Pollan and Mark Levine is a perfect example of why a cataloguer must examine other parts of a book to arrive at the subject heading.

The title page of the book *Fire Your Boss* is shown below.

A hurried assessment of the title may lead one to the erroneous assumption that the book is on methods of getting your boss fired from the organization, whereas this is not the case. In reality, this book is about career changes, career development, and self – actualization, but this can only be determined by examining other parts of the book.

The Subtitle

The subtitle of a book is often useful in the examination of the subject heading as it throws more light on the title. A casual look at the title of the book by Jill Walker *"Is Your Boss Mad?: The Definitive Guide to Coping with Your Boss*", may give the impression of a boss suffering from mental illness but a closer look at the subtitle gives a better understanding to what the book is all about.

The Foreword, Preface, and Introduction

The foreword, preface, and introduction of a book usually state the author's intention and as such one can easily deduce what the book is all about. The excerpt from the book "Is Your Boss Mad?: The Definitive Guide to Coping with Your Boss" by Jill Walker inserted below gives us a good idea of the role of preface in a book

Preface

This book is not aimed at work-shy, soap-dodging, unambitious couch potatoes. I have assumed at least that you: (a) need to be employed, and (b) believe that

the swapping of time for money, which constitutes the basis for 'employment', sits with you as a fair exchange. I am taking it for granted that you are interested in progressing your career and that in some way, however basic or however complex, you bring certain skills to your workplace. Top of the list is the belief that you have the self-respect of wanting to do your job as well as you can.

What this Book Isn't

This is not a smart-arse book that will help you track your employers. Neither is this a 'get out of stuff ' or 'how to get even' manifesto. It is not meant to help you sue your boss for situations that you manipulate, nor is it to make other people miserable. And in no way is this merely an exquisite example of negative thinking!

What This Book is

This book is designed to put you in a positive state of mind for dealing with the wickedness that can manifest as an inevitable consequence of working for someone else. As an 'employee,' you cannot just do what you want; you have to heed the wishes of others, and at times you will interpret these wishes as evidence of madness, badness, or sheer incompetence. However, that person is probably getting paid more than you, has more clout than you, and - unfortunately may have the power to relieve you of your position. These poor bosses will make the mistake of imagining there are plenty more where you came from. It is a plain guide for coping in the face of madness – from others, and from your own madness if things are getting too much. To do this, you need strategies, and this book will give you practicable strategies.

The preface of "Is your Boss Mad?: The Definitive Guide to Coping with Your Boss" by Jill Walker though divided into three parts: preface, what this book isn't and what this book is, provides enough information pointing out the author's intention for writing the book.

Table of Contents/Index/List of Illustrations

Table of contents/index/list of illustrations is usually a good indicators of the main topics. These elements provide confirmation or contradiction of the impression gained from examining other parts of the book. A back–of–the–book index for instance can show what topics are given attention.

The Text

It is important to scan through the text of an information material to ascertain the topics treated in it. This is particularly necessary when the steps above have failed to lead to the determination of the subject heading. The text no doubt can be used to confirm your ideas about the subject.

Cataloguing-in-Publication

Where Cataloguing-in-Publication (CIP) data exists, it is advisable to check the subject headings listed. Although this is advisable, it is necessary to exert caution in the use of CIPs as they are often prepared prior to publication, often without the work in hand.

Having gathered enough information on the subject from the parts of the book examined, the cataloguer should now consider the following:

- Is one topic discussed, or are several?
- If several, are the topics discussed in relation to each other, or separately?
- If separately, is one topic predominant? Which one?
- Is there a specific object, product, condition, or phenomenon?
- Is a particular geographic place covered?
- Is a particular time period covered?

The answers to the questions considered will assist in the formulation of a good subject heading. If one topic is discussed, this makes it easy for the cataloguer, as this would likely result in assigning a topical subject heading.

In the case where several topics or subjects are discussed, the cataloguer would be faced with the task of assigning more than one subject heading. In a situation where the material to be cataloged has a special treatment attached to it, the cataloguer would have to add a subdivision to the subject heading to bring out the special treatment. A book on the law and legislation governing

Archaeology in Nigeria, for instance, is basically on Archaeology, but the special treatment (law and legislation/Nigeria) would be reflected in the subheading given to it.

Should the information material cover a particular time period, there would be a need for a chronological subdivision.

CHAPTER THREE

CONSTRUCTION OF CATALOGUES

Cataloguing or **Cataloguing** or **Library Cataloguing** is the process of creating and maintaining bibliographic and authority records in the library catalog, the database of books, serials, sound recordings, moving images, cartographic materials, computer files, e-resources, etc. that are owned by a library. The catalog may be in tangible form, such as a card catalog, or in electronic form, such as an online public access catalog (OPAC). Relative to the movement of materials within technical services, cataloguing usually follows the receipt of ordered books in acquisitions.

The process of cataloguing involves three major activities, namely, **Descriptive Cataloguing, Subject Cataloguing, and Authority Control**. Cataloguing is the process of preparing catalog entries according to standard rules. It can be looked at in two distinctive ways.

1. Descriptive cataloguing
2. Subject cataloguing
3. Authority Control

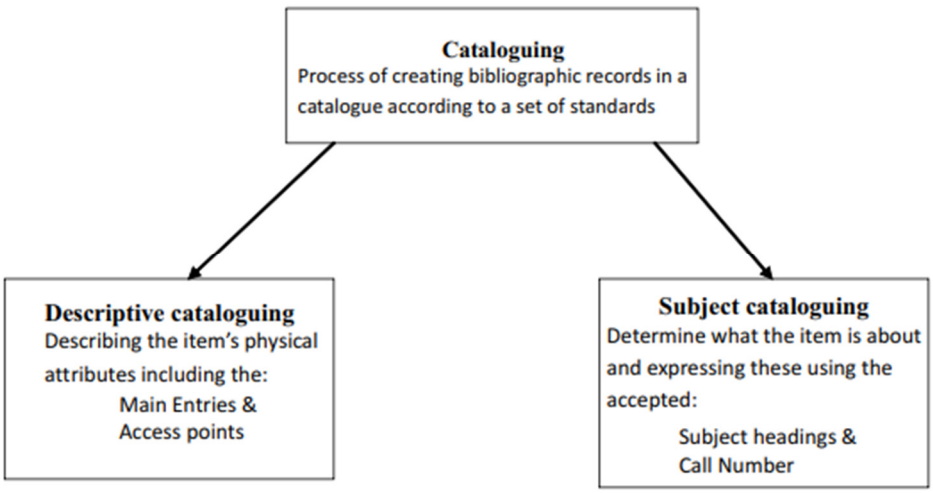


Fig.: Descriptive and Subject Cataloguing

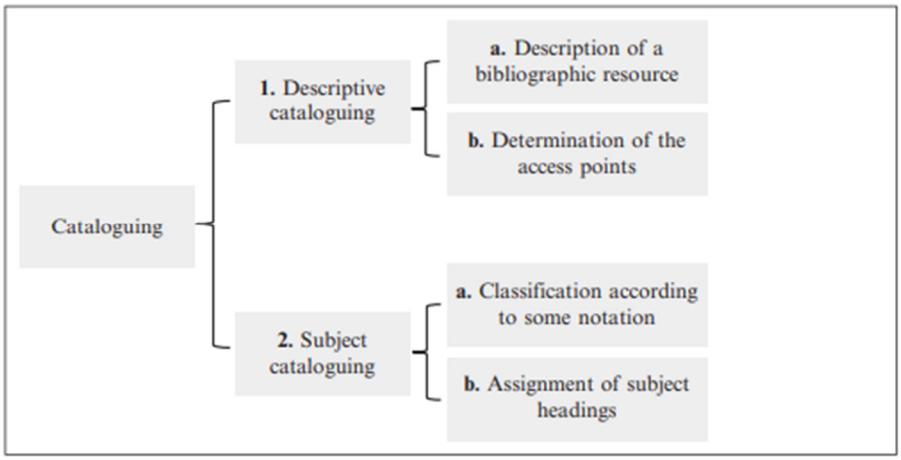
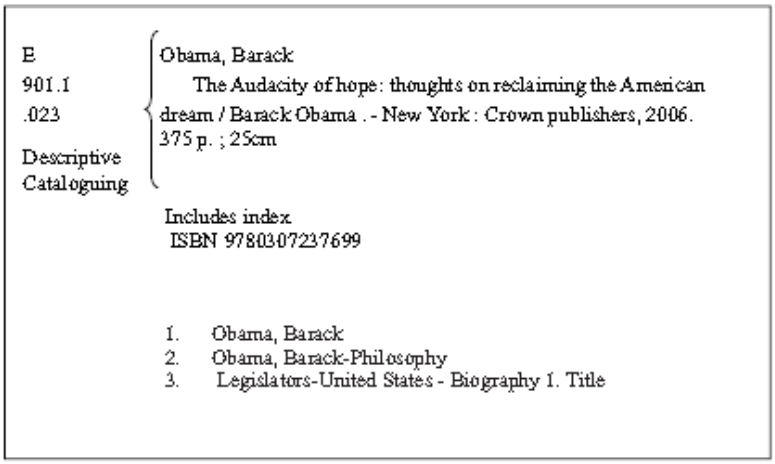


Figure: Division of cataloguing

Descriptive cataloguing involves the description of an information material bringing out all its important bibliographic features such as author, title, editor, publisher, place of publication, etc. It is part of cataloguing concerned with describing the physical details of a book, such as a form and choice of entries and the title page transcription. Such description is expected to be unique to one item alone as the primary data for descriptive cataloguing is obtained from the information material itself. In a catalog record, descriptive cataloguing starts with the access point and ends with the last note in the note area.

Fig: Sample of a catalogue entry indicating descriptive aspects



The chief source of information for books is the title page. Cataloguing information can also be obtained from the verso of the title page and by scanning the entire text. On the other hand, the chief source of information for non-book materials is the material itself, the container or label. Descriptive cataloguing is defined by rules described in AACR2, therefore every item being described must follow the rules set forth in AACR2 (Anglo-American Cataloguing Rules 2nd edition). Cataloging rules have been defined to allow for consistent cataloguing of various library materials across several persons of a cataloguing team and across time.

Cataloguing rules prescribe:

- which information from a bibliographic item is included in the catalogue entry;
- the format for presenting information in a catalogue record

The major objectives of rules are to:

- ensure the international exchange of records;
- overcome the language barrier in the perception of the records;

Promote the conversion of bibliographic records into machine-readable format.

Currently, most cataloguing rules are similar to, or even based on, the International Standard Bibliographic Description (ISBD), a set of rules produced by the International Federation of Library Associations (IFLA).

These rules organize the bibliographic description of an item in the following areas: title and statement of responsibility (author or editor), edition, material-dependent information (for example, the scale of a map), publication and distribution, physical description (for example, number of pages), series, note, and standard number (ISBN). AACR was developed mainly by the American Library Association, the British Library Association and the Canadian Library Association and used in most English speaking countries. The principles that underlie AACR2 are based upon the Paris Principles, which were accepted internationally at the International conference on Cataloguing Principles held in Paris in 1961. The rules in AACR2 are created as an effort to create standard information that will enable library patrons to find information materials in

libraries worldwide because the information is to be listed in the same order and style in cataloguing records.

Features of AACR

1. It contains comprehensive rules of description for all materials i.e. print and non- print materials.
2. AACR is written in sections numbered serially.
3. It has a detailed index that refers the user to sections instead of page numbers.
4. It defines a rule and provides illustrations that are necessary for good understanding.
5. It makes use of 'see reference' whenever a matter re-occurs.
6. AACR gives content page to different chapters apart from the general content page which is not found in any other book in the world of books.

Outline of Rules in AACR

A. The description of library materials
   - General rule (0)*
   - Title and statement of responsibility area (1)
   - Edition area (2)
   - Special area for serials, computer files, maps, and other cartographic materials and music (3)
   - Publication distribution, etc., area (4)
   - Physical description area (5)
   - Series area (6)
   - note(s) area (7)
   - Standard number (8)

B. Headings, Uniform titles, and references
   - Choice of access points (21-29)
   - Headings for persons (30-44)
   - Geographical names (45-47)
   - Headings for corporate bodies (48-56)
   - Uniform titles (57-61)

- References (62-65)

Resource Description and Access (RDA) and AACR

AACR has provided the rules for descriptive cataloguing since its inception. However, with the advancement of technology and the growth of Internet resources, a need arouse for the revision of AACR. This need gave birth to Resource Description and Access (RDA). Initially, RDA was envisioned as a third edition of the Anglo-American Cataloguing Rules and was accordingly called AACR, but in an effort to emphasize the break from the past, it was renamed to Resource Description and Access (RDA).

In its prospectus for RDA, the Joint Steering Committee for the development of RDA expresses its intentions as:

"Built on foundations established by the Anglo-American Cataloguing Rules (AACR), RDA will provide a comprehensive set of guidelines and instructions on resource description and access covering all types of content and media". RDA is currently designed primarily as an online product accessed through tables of contents and keyword searching. It has customized views based on the type of description and resource with workflows that walk a cataloguer through the process of creating a record and links to RDA instructions.

Some differences between AACR and RDA are seen in their use of terminology and abbreviations. To a large extent, RDA tries to mirror current terminology. Where AACR uses ***"uniform title"***, RDA makes use of ***"preferred titles"***. The use of the word ***"chief source of information"*** by AACR is also replaced by ***"preferred sources of information"*** by RDA. Unlike AACR which makes use of abbreviations, RDA abstains from abbreviations except for units of measurement, abbreviations that a resource uses to identify itself, and abbreviations that are regularly used in resources and are commonly understood by users

Descriptive cataloguing exercise

- Ascertain the main heading and write it down in a cataloguing worksheet

- Ascertain the title proper from the title page with the statement of responsibility (who is responsible for the intellectual content of the book). Write down the title and statement of responsibility separated be a slash (/) sign
- If it is an edited work, write edited by
- Check the edition statement and write it down in the space meant for it. If the work is a first edition an edition statement will not be necessary. In that case, write nil.
- It is not necessary to include general material designation (GMD) for books. Under the column for material or type of publication write nil
- Check for the place of publication (it is a town, not a country e.g. Ibadan and not Nigeria)
- Look for the publisher
- Ascertain the date of publication and then fill the space for publication details using the place of publication, name of publisher, and date of publication. Separate the place of publication from the name of the publisher using a colon (:), and separate name of the publisher from the date of publication using a comma (,)
- Description area starts with the number of preliminary pages e.g. xi, then the number of main pages (561p.) Check for illustrations, check for the size (e.g. 23cm), and note accordingly
- If the book is part of a series, indicate that in the series area, if not, write nil.
- Under the notes area, indicate important features of the book such as the bibliography and index
- Check for the International Standard Book Number (ISBN) and write it down in the appropriate space meant for it in the worksheet

Fig: A worked example for a book using a worksheet:

Heading	Olabisi, Adepoju
Title and statement of responsibility	Information sources in science and technology: A new approach / Adepoju Olabisi
Edition	Nil
Material or type of publication	Nil
Publication details	Ibadan: Moba printing press, 2002
Physical description area	v., 88p. : 22cm
Series area	Nil
Notes area	Includes index
Standard availability number	ISBN 878-34528-7-8

Fig. 14: Worked example in a card entry

Olabisi, Adepoju
Information sources in science and technology: A new approach /Adepoju Olabisi.- Ibadan: Moba printing press, 2002.
v., 88p. : 22cm

Includes index
ISBN 878-34528-7-8

Catalogue template

Call number	
Heading	
Title and statement of responsibility	
Edition	
Material or type of publication	
Publication details	
Physical description area	
Series area	
Notes area	
Standard availability number	
Subject	
Subject	
Subject	

Worked example using the template

Call number	HD 1062 .D5
Heading	Dickinson, Peter A.
Title and statement of responsibility	The complete retirement planning book : your guide to happiness, health, and financial security/Peter A. Dickson
Edition	Nil
Material or type of publication	Nil
Publication details	New York : E. P. Dutton, 1976
Physical description area	x, 278 p. ; 24 cm
Series area	Nil
Notes area	Includes index and bibliography
Standard availability number	0841504466
Subject	Retirement
Subject	Retirement-United States-Planning
Subject	Older people-United States-Life skills guides

Worked example in a card format

HD
1062
.D5

Dickson, Peter A.
The complete retirement planning book: your guide to happiness, health and financial security / Peter A. Dickson.- New York: E. P. Dutton, 1976.
x., 278p. : 24cm

Includes index and bibliography
ISBN 0841504466

1 Retirement
2. Retirement – United States – Planning
3 Older people – United States – Life skills guides
i. Title

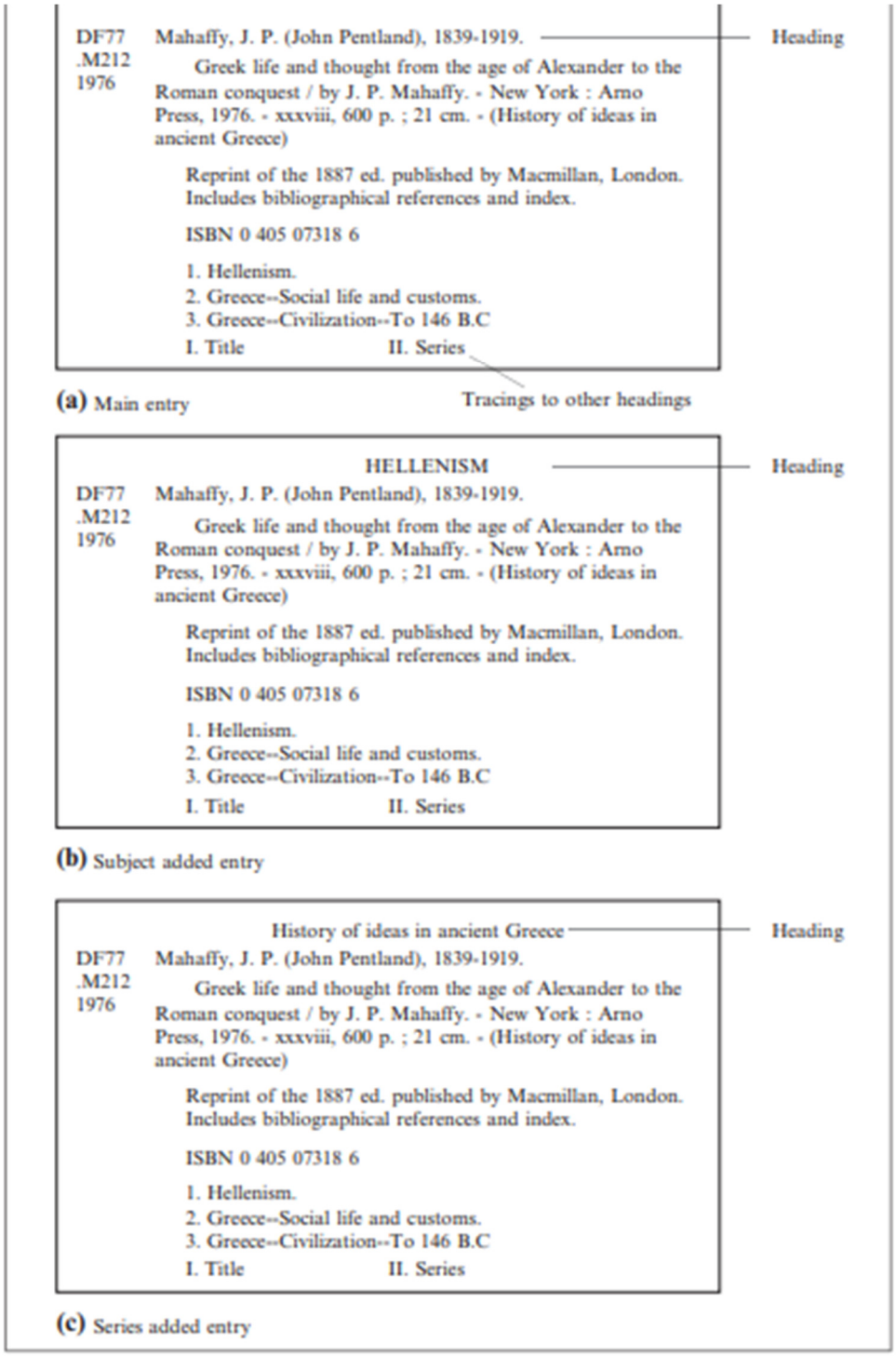


Figure 1.3 Cards for the same bibliographic record with different headings printed at the top of the card.

Card catalogs, although they may still be in use in some libraries, have been largely replaced by automated catalogs. These catalogs are accessible via the Web and, as mentioned, are called OPACs. Figure 1.2 shows the same record in Figure 1.1 as displayed in the Library of Congress Online Catalogue.

Various observations can be made about these two different catalog forms, the most important being that:

1. the data are encoded using the same cataloguing and classification standards in both cases (see, for example, the classification number and the description of the pages and size of the item);
2. it is easier to understand the information as displayed in the computerized catalog, as there are labels for each field, which in most cases are comprehensible. Deciphering the information on a catalog card is more difficult, as the reader needs to have at least some knowledge of the codes used and their arrangement on the card

MARC and Online Catalogue (OPAC)

Computerized catalogs have certain advantages over the card types. There is no need to replicate the records so as to provide different access points. There is only one electronic bibliographic record per item, which can be accessed and displayed in various modes through either the library's local network or the Web (see Figures 1.2, 1.4, and 1.5 for examples). Maintenance is easier and more cost-effective, and sharing of information among library systems is possible.

Nevertheless, both systems share common norms and terminology. For example, as is shown in Figures 1.1 and 1.2, the title, author's name, publisher's data, description, subject, etc. are identical. In both cases, these descriptions depend on the AACR2 standard, on the same subject list, and on the same classification schemes.

Digital bibliographic records and authority data are encoded using the MARC 21 Format for Bibliographic Data and the MARC 21 Format for Authority Data.

MARC 21 is a data format that stands for Machine-Readable Cataloguing 21. It is a set of codes and symbols that represent the elements of a bibliographic record, such as author, title, publisher, subject, and so on. Following the descriptions of the Leader and the Directory, the variable control fields are arranged in field tag order (001-008).

MARC stands for MAchine Readable Cataloguing. Figure 1.6 shows part of the MARC 21 record for a book by E. Svenonius, as displayed in the British Library Online Catalogue. Encoding data using the same format promotes interoperability among digital library tools.

Overall, a catalog is essential for organizing the information in a library. The structure of bibliographic records is governed by various encoding schemes, relevant to both traditional and digital environments. These encoding standards and their evolution will be discussed in the following chapters. But first, the concepts of cataloguing and classification need to be explained.

MARC 21 is a result of the harmonization of U.S. and Canadian MARC formats and UNIMARC (widely used in Europe) is the current and most predominant standard now. The MARC 21 standards include formats for authority records, holdings records, classification schedules, and community information, in addition to the format for bibliographic records.

MARC is the basic format for representing the library's resources in the catalog. However, not everything in MARC is captured on the OPAC display of a record. MARC allows the information contained in a catalog record (or bibliographic record) to be exchanged between systems. This has facilitated copy cataloguing which enables you to import records from LOC or OCLC.

Personal Name	Mahaffy, J. P. (John Pentland), 1839-1919.
Main title	Greek life and thought from the age of Alexander to the Roman conquest / by J. P. Mahaffy.
Published/Created	New York : Arno Press, 1976.

Description
xxxviii, 600 p. ; 21 cm.

ISBN
0405073186

LC classification
DF77 .M212 1976

Subjects
Greece--Social life and customs.
Greece--Civilization--To 146 B.C.
Hellenism.

Notes
Reprint of the 1887 ed. published by Macmillan, London.
Includes bibliographical references and index.

Series
History of ideas in ancient Greece

Figure 1.2 A bibliographic record as displayed in the Library of Congress Online Catalog (http://catalog.loc.gov)
Source: http://lccn.loc.gov/75013278

System number	008053121
Nat. bib. no.	GBA044465 bnb
Author - personal	•Svenonius, Elaine.
Title	•The intellectual foundation of information organization / Elaine Svenonius.
Publisher/year	•Cambridge, Mass. ; London : MIT Press, c2000.
Physical descr.	xiv, 255 p. ; 24 cm.
Series	(Digital libraries and electronic publishing)
Bibliography etc.	Includes bibliographical references (p. [223]-243) and index.
Subject	•Information organization.
	•Bibliography -- Methodology.
	•Cataloging.
Series	•(Digital libraries and electronic publishing)
Holdings (All)	Details
Shelfmark	YC.2000.a.7850 Request
ISBN	•0262194333 : £22.95
Dewey class. no.	•025.3 21

Figure 1.4 A bibliographic record from the British Library Online Catalogue (http://catalog.bl.uk)
Source: http://primocat.bl.uk/F?func=direct&local_base=ITEMV&doc_number=008053121

The intellectual foundation of information organization / Elaine Svenonius

Bib ID	1907843
Format	Book, Online - Google Books
Author	Svenonius, Elaine
Description	Cambridge, Mass. : MIT Press, 2000 xiv, 255 p. ; 24 cm.
ISBN	0262194333
Series	Digital libraries and electronic publishing
Notes	Includes bibliographical references (p. [223]-243) and index.
Subjects	Information organization. | Bibliography - Methodology. | Cataloging.

Figure 1.5 The same bibliographic record as in Figure 1.4 from the National Library of Australia Online Catalogue (http://catalogue.nla.gov.au)
Source: http://catalogue.nla.gov.au/Record/1907843

100	1	|a Svenonius, Elaine.
245	14	|a The intellectual foundation of information organization / |c Elaine Svenonius.
260		|a Cambridge, Mass. ; |a London : |b MIT Press, |c c2000.
300		|a xiv, 255 p. ; |c 24 cm.
490	1	|a Digital libraries and electronic publishing
504		|a Includes bibliographical references (p. [223]-243) and index.
650	0	|a Information organization.
650	0	|a Bibliography |x Methodology.
650	0	|a Cataloging.
830	0	|a Digital libraries and electronic publishing

Figure 1.6 Part of the MARC 21 encoding of the bibliographic record illustrated in Figure 1.4, as displayed in the British Library Online Catalog
Source: http://primocat.bl.uk/F?func=direct&local_base=PRIMO&doc_number=008053121&format=001

There has been a sea change in cataloguing practice with the increasing use of computers, information communication technology, and network communications. Cataloguing standards have been rationalised to suit the changing cataloguing practice, which has been universally accepted and adopted.

An online catalog has the following characteristics:

- It is meant to be used by end-users with or without training in online searching.
- The database records are usually in the MARC format or derived from MARC format.
- The records are brief bibliographic descriptions enriched by a small number of controlled subject descriptors from Sears list or LC Subject Headings and classification numbers either from DDC or LC.

The online catalogs consist of information about the books like author (s), title pagination/volumes, publisher, year of publication, series, ISBN, subject descriptors class number, etc. Whereas in the case of periodicals this catalog

generally describes periodicals as a whole. The contents of a periodical and the description of the article are recorded in the full-text databases

Online catalogs are basically menu-driven and designed with few search options to help the novice searches. Some online catalogue, however, operate with command language mode for more exhaustive searching. It can be done by specific item searching and subject searching.

The MARC record format was designed by the Library of Congress and the British Library also adopted it. The aim was to construct bibliographic records in machine-readable form and to facilitate reformatting for a wide variety of purposes, one of which was the production of a record for the creation of library catalogs. This national effort made it possible to download from the database on magnetic tapes supplied by the Library Congress or the British Library, to obtain the records for the stock of a specific library. Thus, a number of computers readable catalogs proliferated in the USA, UK, and other European countries.

AACR2 and MARC are two different entities. AACR2 provides rules for describing items in a catalog record whereas, MARC is a communication standard and provides a framework for catalog record.

MARC is the basic format for representing library resources in the catalog. For records entered into an online catalog, the MARC format is generally used. MARC - is a generic term loosely used to refer to all standard machine-readable formats developed by international agencies viz. UNIMARC, LCMARC, USMARC, MARC 21 as well as all national-level MARC standards. In this unit, we will discuss

UNIMARC (UNIversal MARC) is a set of international standards for creating and formatting bibliographic records for library materials.

MARC 21: The Library of Congress serves as the official depository of United States publications and is a primary source of cataloguing records for US and international publications. When the Library of Congress began to use computers in the 1960s, it devised the LC MARC format, a system of using brief numbers, letters, and symbols within the cataloguing record itself to mark different types of information. The original LC MARC format evolved into MARC

21 and has become the standard used by most library computer programs. The MARC 21 bibliographic format, as well as all official MARC 21 documentation, is maintained by the Library of Congress. It is published as *MARC 21 Format for Bibliographic Data*.

Authority Control

It is a process that organizes bibliographic information in library catalogs by using a single, distinct spelling of a name (heading) or a subject for each topic, called an authority record. Authority Record is a record that gives the authoritative form (the form selected for a heading) of a personal name, corporate name, family name, place name, uniform or preferred title, series title, subject, etc. in the library catalog or the file of bibliographic records and are listed in an authority file containing headings of library items. To ensure consistency, an authority record is created for each authorized heading (authorized access point) for a proper name or a subject, etc. An authority record is made when a heading is established, i.e., authorized for use as the main entry (preferred title and, if appropriate, the authorized access point for the creator), an added entry, or subject entry, for the first time, while cataloguing of a library item. Authority control is the process that is applied to both descriptive and subject analysis parts of cataloguing. It ensures the consistency and correctness of names and subject headings entered into the bibliographic description.

"Authority control" means following a recognized or established form. Usually, a cataloger chooses subject and name headings from a list of approved headings. In a conversation, if you talked about visiting the "Getty Museum" and the "J. Paul Getty Museum" in California, your listener would know you meant the same thing. But if a cataloger sometimes uses "Getty Museum" and other times uses "J. Paul Getty Museum" as headings in a catalog, the library user will have a difficult time finding all the books on that subject. If a cataloger follows the Library of Congress's list of established forms for names, he or she will use the heading "J. Paul Getty Museum." As long as the cataloger always uses one established form, all the books on that museum will be found in one place in the catalog.

For names, the best authority is the Library of Congress Name Authority file. This file is available in machine-readable format from the Cataloguing Distribution Service (CDS) of the Library of Congress or online at http://authorities.loc.gov. The form of the name used (personal name, corporate name, conference or meeting name, series title, or uniform title) can be checked against this authority.

Authority files

Apart from the main and added entries and the shelf list cards, a library might use an authority file(s) to maintain uniformity across headings. These files contain authorized forms of the headings used in a catalog. For example, an author may publish under different names or different forms of names. Variations also exist in titles, series, and subject headings. To avoid confusion and to support user requests effectively, no matter which form of name, etc. they provide, authority files are used. These contain the authorized version of each name, title, series, heading, and references to the other possible, unauthorized forms. The process of maintaining the authority file(s) is called authority control

Functional Requirements for Authority Data (FRAD), formerly known as Functional Requirements for Authority Records (FRAR), is a conceptual entity-relationship model developed by the International Federation of Library Associations and Institutions (IFLA) for relating the data that are recorded in library authority records to the needs of the users of those records and facilitate and sharing of that data.

NOTE: Search the Library of Congress Authorities (authorities.loc.gov) for the author 'Mahaffy, J. P. (John Pentland)', and through the authorized heading you will reach the labelled display (or use directly the permanent link http://lccn.loc.gov/
n50041037), where you can see the authorized form and the variants of the author's name. You can also search for an author in the Virtual International Authority File (http://viaf.org) to discover the potential name variants.

CHAPTER FOUR

Index

Index means 'to indicate' or 'to point out' and we all know that at the end of a book, there is an exhaustive index showing the list of terms along with the relevant page numbers for instant reference for easy retrieval of the information. Very often the index satisfies the subject approach.

The **index** is an alphabetical listing at the end of a book which aids the tracing of the topics treated in the book. Each sought term listed will have pages to trace from the book for quick referencing.

Index- An index is a guide to the intellectual content of a document. It provides access to information by pointing out where information can be located in a book, journal, etc. Indexes are usually arranged in alphabetical order with entries for subjects or names. In some cases, however, the entry arrangement for names and subjects appear together. Indexes are available in print, CD-ROM, or on-line

The **index** in a classification scheme comprises an alphabetical list of terms with corresponding notation, which aids the cataloguer as an entry point to the classification schedule

The **index** is the alphabetical list of the terms used in the schedules, together with the corresponding notation. It provides access to the schedules through the provision of an alphabetical list of terms with their corresponding notations.

Indexing is the art of identifying the subjects contained in a given publication and matching these identified subjects with corresponding words/ terms listed in a list of subject headings or in a thesaurus. The terms used in indexing are called subject headings, descriptors, or index terms.

As indexing and classifying are both parts of subject cataloguing or content description. Since subject headings are never used for shelving and filing books and documents, it is necessary to complement subject heading catalogs with a shelf list showing the actual place of books on the shelves. This is not necessary when a classification is used for content description.

Too many overlapping terms are not useful but only confusing. Nor is it any good to simply invent subject headings. But then how do you proceed? How can one limit the number of possible terms and choose suitable ones?

One step in achieving some consistency in indexing is to use a controlled vocabulary, i.e. a subject headings list or a thesaurus. The terms listed in a thesaurus generally are called descriptors.

The best-known English-language subject heading lists are the Sears List of Subject Headings and the Library of Congress Subject Headings List. And there are hundreds of thesauri for all special fields of knowledge

Thesaurus

A thesaurus is a collection of generally within one special field of knowledge that not only lists the terms in alphabetical order but also displays their relationship. Each descriptor is followed, where necessary, by a scope note (SN), i.e. a brief explanation of how it should be used, and references to the synonymous descriptors, i.e. defining which of several possible synonyms should be used (UF-used for). The thesaurus also refers the user to the top term (TT), broader (BT), specific (NT = narrower term), and/or related (RT) descriptors.

The following example is taken from the OECD Macrothesaurus:

Special education

SN: Special types of education for exceptional (gifted or handicapped) children.

TT: EDUCATIONAL SYSTEMS

BT: EDUCATIONAL SYSTEMS

NT: COMPENSATORY EDUCATION CORRECTIONAL EDUCATION

RT: GIFTED STUDENT

MENTAL RETARDATION

SPECIAL SCHOOLS

Thesauri are available for nearly all special fields of knowledge

Document Indexing

The word index still connotes back-of-the-book and periodical indexes more often than it does subject catalogs for library collections. However, library indexes and catalogs are nearly as old as alphabets, being present in some form with almost every organized collection of written records as far back as the early Mesopotamian and Egyptian archives. In the final years of the 19th and the early years of the 20th centuries, catalogers frequently made numerous analytics for significant informational works in their libraries. The books were expensive. The high cost of acquisitions and the relative scarcity of printed materials were countered with efforts to exploit collections intensively. Librarians were a captive labor force, often with "disposable time" on the job. And what more profitable "pick-up work" could there be than making analytic indexes to anthologies and treatises? If the cards followed standard cataloguing practices they were filed into the official catalog. If they were less carefully constructed, they might be kept in a desk drawer or a shoebox in the reference department. John Rothman wrote about a continuing reciprocity between library classification and indexing:

Although indexing is often clearly differentiated from cataloguing and classification, there is considerable overlapping in practice, and the development of new cataloguing techniques or new classification systems is bound to affect indexing practices. Thus the development of the Dewey and other decimal classification systems for library catalogs was paralleled by the development of decimal, coded, and faceted topical indexing systems.

Word-based indexing systems both controlled vocabulary and free text

Word-based indexing systems are used to create indexes for conducting searches on databases based on text sentences. These systems extract words from the text and generate a directed graph representing the connection between the words [1]. Another approach for word-level indexing is to use phonemes to retrieve similar-sounding words from a database [2]. This method converts input words into phonemes and retrieves words with identical phoneme-based keys.

Free Text Indexing'

An indexing system without controlling the vocabulary may be referred to as 'Natural Language Indexing' or sometimes as 'Free Text Indexing'. Keyword indexing is also known as Natural Language or Free Text Indexing. 'Keyword' means a catchword or significant word or subject denoting a word taken mainly from the titles and/or sometimes from the abstract or text of the document for indexing. Thus keyword indexing is based on the natural language of the documents to generate index entries and no controlled vocabulary is required for this indexing system. Keyword indexing is not new. It existed in the nineteenth century when it was referred to as a 'catchword indexing'. Computers began to be used to aid information retrieval systems in the 1950s

NATURAL LANGUAGE (NL)

If the terms that appear in the documents are used without required modifications, it is an NL. Since the usage of an NL leads to many problems, such as those arising from the use of different words by different authors to denote the same idea, an alternative to NL is, to use artificial language adapted to the specific needs. The artificial language uses concept indexing rather than term indexing. The terms are representatives of an NL used by authors. The concepts imbibe standard descriptions established in the IL. The NL is flexible and advantageous to authors to use different terms to denote the same concept. The indexer, who is more concerned with the ideas conveyed rather than the language niceties, depends upon artificial language

INDEXING LANGUAGES

Indexing language (IL) is an artificial language made up of expressions connecting several kernel terms and adopted to the requirements of indexing. The function of an IL is to do whatever a natural language (NL) does and in addition, organise the semantic content through a different expression providing a point of access to the seekers of information.

An IL is a system for naming subjects and has a controlled vocabulary. The vocabulary of an IL may be verbal or coded. A classification scheme uses coded vocabulary in the form of notation and authority lists use verbal vocabulary. It

is a prerequisite to understand the features of the language used for the representation of the subject content of the documents in terms of their linguistic structures and functions for the purpose of studying the structure of indexing language. Thus, there are areas of linguistics that are of common interest to information scientists.

A language is a code through which messages are transmitted. It is a communication medium based on the association of thoughts/ideas. In terms of linguistics, all spoken languages (i.e. natural language) consist of three basic elements:

vocabulary, syntax, and semantics. Vocabulary is a list of terms/words used in a particular natural language.

Syntax comprises a grammatical structure or a set of rules that govern the sequence of occurrence of terms/words in a sentence.

Semantics refers to the study of what meaning is and how it operates. It is, in other words, a systematic study of how meaning is structured, expressed, and understood in the use of a language. Syntax is used to resolve word meaning through the determination of context.

Information systems are concerned with the communication of information about the documents to the potential users of those documents. The means of communication are the subject-indexing language or simply an indexing language. An IL is a system for naming subjects of the records of information (i.e. documents). It is an artificial language made up of expressions connecting several kernel terms/notations. The function of an IL is to do whatever an NL does and in addition, organise the semantic content through a different expression providing a point of access to the seekers of information. Thesauri, the readymade lists of subject headings, and classification schemes are examples of subject indexing languages.

Controlled vocabulary

A controlled vocabulary is: An authoritative, restricted list of terms (words or phrases) mainly used for indexing/tagging content to support content management and retrieval

The set of allowed values/terms for a designated descriptive metadata element/field. Controlled in who, when, and how new terms may be added.

The indexer is in charge of picking terms and exercising control over the use of words or phrases designated as indexed terms in this form of indexing language. He accomplishes this by attaching accepted index words to terms that have been listed. The terms used are permitted for use in controlled language indexes, as noted in the list. The indexer chooses and assigns terms to documents based on this pre-determined list of terms. These terms are subject descriptors drawn from a pre-determined and standardised collection of terms. To verify that the terms used are consistent, the indexer reviews this standard list of terms. The topic heading lists and thesauri, which are alphabetical listings and classification schemes that assign notation to subject names, make up the list sometimes referred to as the "Authority List." Indexers select appropriate phrases from the vocabulary store or authority list to establish the topic matter of documents. He chose the subject descriptors from a controlled vocabulary that defined the document's author's concepts

		Library Catalogue	Index
i)	Arrangement	A catalogue can be arranged alphabetically or in a classified sequence.	An index is always arranged alphabetically.
ii)	Entry	Includes some descriptive specification of a document containing a subject.	Index entry only specifies the subject.
iii)	Flexibility	New entries can be inserted in a systematic order at any time.	New subjects can be inserted any time.
iv)	Purpose	It is a record describing the documents acquired by a library.	Provides access to any of bibliographical entries of the catalogue through author, title or subject.
v)	Entries	Analytical entries may be prepared depending on the nature of the document.	No such entries are required in case of an index.

Taxonomy

Taxonomy is as old as the language skill of mankind. It has always been essential to know the names of edible as well as poisonous plants in order to communicate acquired experiences to other members of the family and the tribe3. Although the art of taxonomy and the resulting forms of taxonomic structures are rooted in the works of Aristotle, Linnaeus, and Darwin, the meaning of the term taxonomy has been expanded to cover new purposes. We now use taxonomies for creating metadata, or common words to describe an object, for information retrieval, categories supporting browse navigation, schemas governing Web page layout and structure, and data control lists used in support of data mining (searching thousands of data records to uncover patterns and relationships contained within the activity and history store to fulfill a reporting request). Examples of these classification systems and the resulting taxonomies vary in structure, composition, and purpose, but they are all organized according to defined principles4

Folksonomy, a free-form tagging, is a user-generated classification system of web contents that allows users to tag their favorite web resources with their chosen words or phrases selected from natural language. These tags (also called concepts, categories, facets, or entities) can be used to classify web resources and to express users' preferences. Folksonomy-based systems allow users to classify web resources by tagging bookmarks, photos, or other web resources and saving them to a public website like Del.icio.us. Thus information about web resources and online articles can be shared in an easy way.

The word Folksonomy is a portmanteau of the words folks and taxonomy coined by Thomas Vander Wal (Smith 2006), which implies that it can be understood as an organization of web contents by folks (users). The classifiers in folksonomy are not dedicated information professionals, and Thomas Vander Wal described this as a "bottom-up social classification" (Vander Wal 2004, 2005a,b)

folksonomy tags are index terms from the point of view of the user. An index term is the representation of a concept, preferably in the form of a noun or noun phrase derived from natural language. Nouns are chosen because they

are the most concrete part of speech. An index term can consist of more than one word. Index terms should be checked for accuracy and acceptability in reference tools, such as dictionaries, encyclopedias, thesauri, and classification schemes (ISO 1985).

Advantages of Folksonomy

Folksonomy-based systems can: (i) store personal bookmarks, (ii) analyze users' bookmark histories and extract user groups that have similar interests, and (iii) recommend resources that are commonly preferred.

Disadvantages of Folksonomy

The four main problems of folksonomy tagging are polysemy, synonymy, plurals, and depth (specificity) of tagging.

Polysemy: Polysemy refers to a word that has two or more similar meanings. "Poly" means 'many', and "semy" means 'meanings'. A polysemous word is one that has many ("poly") related senses ("semy"). For example, a "window" may refer to a hole in the wall, or to the pane of glass that resides within it (Pustejovsky 1995)

Synonymy: Synonymy, different words with similar or identical meanings, presents a greater problem for tagging systems because inconsistency among the terms used in tagging can make it very difficult for one to be sure that all the relevant items have been found. It is difficult for a folksonomy user to be consistent in the terms chosen for tags; for example, items about the Web may be tagged either World Wide Web or WWW

Plurals: Plurals and parts of speech and spelling can undermine a tagging system. For example, if tags Cat and Cats are distinct, then a query for one will not retrieve both unless the system has the capability to perform such replacements built into it

Depth (specificity) of tagging: Specificity means how specific should the user (classifier) be in translating a concept into index term(s). Web resources can be tagged to varying levels of specificity, from very broad subjects taken only from the title and abstract to the paragraph level. The depth of tags refers to how

many tags there are, relative to a web resource in the system. Tonkin (2006) deduces that the choice of tags is necessarily strongly influenced by user behaviour and habit.

Linking folksonomies to LCSH has been deemed by Kwan and Chan (2009) as a helpful aid. Even the Library of Congress Working Group on the Future of Bibliographic Control "has suggested that libraries should open up their catalogs to allow users to add descriptive tags to the bibliographic data in catalog records" (Rolla, 2009).

Tagging is a viable subject access point to complement LCSH and other controlled vocabularies in online catalogs.

The most popular, widely used folksonomy-based systems are:

1. Del.icio.us: www.del.icio.us
2. Flickr: www.flickr.com
3. YouTube: www.youtube.com
4. CiteULike: www.citeulike.org
5. Connotea: www.connotea.org
6. Technorati: www.technorati.com
7. Furl: www.furl.net
8. TagCloud: www.tagcloud.com
9. Yahoo's MyWeb: http://myweb.yahoo.com
10. Simpy: www.simpy.com
11. Unalog: www.unalog.com
12. Shadows: www.shadows.com
13. Spurl: www.spurl.net
14. Scuttle: www.scuttle.org
15. Tagzania: www.tagzania.com
16. Dabble: www.dabble.com
17. LibraryThing: www.librarything.com
18. Wink: www.wink.com

Libraries and Folksonomies

When an ILS OPAC or discovery tool had the tagging capability, did libraries take advantage of this function? The authors chose the Koha OPAC as an example and did a survey of tagging activities in the OPACs of 307 Koha implementers.

Koha is an open-source ILS that is widely used in libraries all over the world. Tagging is one of the important features of its system design. After adding tags, users can choose to keep these tags private and hidden in their account, or publish them in the OPAC as a "Cloud". Subsequently, librarians can decide to turn a "Tag Cloud" on or off. Additionally, librarians can also decide whether the tags created by users can be published in the OPAC directly or must be approved by librarians before publishing. An external dictionary can be installed in the Koha system which serves as a "whitelist" of pre-allowed tags and helps librarians to verify terms added by users.

LibraryThing for Libraries

LibraryThing1 is a social cataloguing Web site that allows users to assign descriptive metadata to books in the form of tags. This descriptive metadata has been leveraged into LibraryThing for Libraries (LTFL), a series of enhancements that can be incorporated into a library's online public access catalog (OPAC)

LibraryThing is an online service to help people catalog their books easily. You can access your catalog from anywhere—even on your mobile phone.

LibraryThing is a social cataloging web application for storing and sharing book catalogs and various types of book metadata. It is used by authors, individuals, libraries, and publishers. LibraryThing remains the most robust source of tagging data for books and the most widely adopted system for integrating tag data into library catalogs. Other solutions—including MTagger, PennTags, VuFind, and WorldCat Local—have yet to amass a substantial enough database of tags or tagged items to make them suitable mechanisms through which the value of tags may be evaluated

Z39.50

Z39.50 is an international standard client-server, application layer communications protocol for searching and retrieving information from a database over a TCP/IP computer network, developed and maintained by the Library of Congress. It is covered by ANSI/NISO standard Z39.50, and ISO standard 23950.

Z39.50 is widely used [as of?] in library environments, for interlibrary catalog search and loan, often incorporated into integrated library systems and personal bibliographic reference software, and social media such as LibraryThing.

Work on the Z39.50 protocol began in the 1970s, and led to successive versions in 1988, 1992, 1995, and 2003. The Contextual Query Language (formerly called the Common Query Language)[1] is based on Z39.50 semantics.

Overview

With the OCLC Z39.50 Cataloguing service, libraries access WorldCat to search and retrieve MARC records for cataloging, edit records in their local systems, and set holding information in WorldCat. This service is available to libraries that have a cataloguing subscription. If your library does not have a cataloguing subscription, take the first step today to learn more.

Features

Search and retrieve OCLC-MARC records in WorldCat for cataloguing

Search and retrieve LC Names and Subjects authority file records

Edit records in your local system

Set holdings information on WorldCat online via Z39.50, or through WorldCat data sync collections

Customized local displays defined by your local Z39.50 client

Bibliographic records include non-Latin scripts

Requirements

You need Z39.50 client software that is:

Integrated or compatible with your local online system

Capable of implementing the OCLC Extended Services Definition of Version 3 (Z39.50-1995) for setting holdings (not required for libraries that return holdings via data sync or EDX).

Note: Consult with your local system vendor and/or system administrator for information on implementation of the OCLC Extended Services Definition and assistance with local client configuration.

Also required is the ability to extract OCLC-derived Z39.50 records from your local system (for libraries setting holdings via data sync or EDX only)

CHAPTER FIVE

CLASSIFICATION SCHEMES AND SUBJECT HEADING LISTS (e.g. LC AND LCSH OR DDC)

Classification Schemes

Classification Schemes

Library **classification schemes**, both ancient and modern, all have the same basic aims: they attempt to simplify the world of knowledge and, crucially, they help us to locate things. Library classification operates to keep similar items together and separate from dissimilar items. It attempts to do this in a way that will help library users to locate the materials they need. The aim is to get the book to the reader or the reader to the book in the quickest possible time

A library **classification scheme** is essentially a logical arrangement of subjects plus a system of symbols representing those subjects. All classification schemes have schedules (logically arranged lists of subjects), and all classification schemes have notations (systems of symbols representing the subjects).

Classification Schemes

A scheme is a plan or a program of action to be followed. The classification scheme is an orderly arrangement of terms or classes with assigned notations. Classification schemes map out fields of knowledge in ways that are suitable for library use. It demands that cataloguers ascertain the 'aboutness' that is what an information material is really about and thereafter assign a call number based on the classification scheme. Library classification brings together in one place all works dealing with the same subject.

Classification is part of subject analysis (or subject cataloguing), which deals with the content of items. The assignment of subject headings, i.e. terms from a controlled vocabulary, is another dimension of the subject analysis.

A classification scheme is a technique or tool used for the arrangement of books or documents or other information resources in a systematic order. It

involves describing books or information resources into classes or groups. These classes are dependent on the characteristics of each book.

Classification schemes in the context of the library are used to organise library resources such as books, computer files, manuscripts, CD-ROM and electronic resources according to their subject areas. This means that books of the related subject are shelved together for easy location in the library. Each of these information resources in the library is assigned a special number called Call Number. This call number is used to differentiate each book from another. Classification schemes are therefore tools or techniques used by libraries to systematically arrange information resources and ensure easy access and retrieval of library resources by users of the library.

Types of Classification Schemes

There are several types of classification schemes used in libraries all over the world. However in general, Classification schemes can be divided into three types depending on how they are used.

General classification schemes: These schemes cover all subjects. Examples include Dewey Decimal Classification and Library of Congress Classification

Special classification schemes: these are classification schemes meant for organising specific collections. Examples include National Library of Medicine, Oxford Decimal Classification, and Moy's Classification.

National schemes: are classification schemes specially created for certain countries such as the Swedish library classification system

In terms of functionality, classification schemes are often described as

Hierarchical: shows the hierarchical arrangement of topics, from most general to most specific

Enumerative: explicitly enumerates or list all the single and composite aspects of a subject in the schedule. Terms for aspects such as place, period, and form appear repeatedly throughout the schedules making the scheme bulky.

Faceted or analytico-synthetic: lists numbers for single concepts only allowing the cataloguer to construct numbers for composite subjects thereby makes the scheme less bulky.

There are few completely enumerative systems or faceted systems, most classification schemes are a blend but favouring one type or the other. The most common classification schemes, Library of Congress Classification and Dewey Decimal Classification, are essentially enumerative, though with some hierarchical and faceted elements.

There are different types of classification schemes used by different types of libraries. Some of these schemes are;

1. Colon Classification (CC) scheme
2. Universal Decimal Classification (UDC) scheme
3. Bibliographic Classification (BC)scheme
4. Moy's classification scheme
5. Dewey Decimal Classification (DDC) scheme
6. Library of Congress Classification (LCC) Scheme

Step-by-Step Guide to Classifying Using Classification Scheme

Since classifying is the most important task in a library, it must be done well. A step-by-step guide to classifying is given below although some of it is repetition.

"Step-by-Step Guide to Classifying

The work of classifying a book is in several steps. I suggest that the reader go over the following questions once or twice, then apply the steps to individual books that come up for classifying.

Step 1

Is it a book about something (about a rice thresher, for example, or about fishponds), or is it a book of a certain kind (an atlas, for example, or a dictionary)?

Step 2

If it is a book about something, is the entire book about the same thing or does it deal with several subjects?

Step 3

If it deals with one subject, name that subject. Match that name with the narrowest of the established classes that will fit and assign the corresponding class number to the book.

Step 4

If it deals with several subjects, can these subjects all be said to be sub-topics of one broader topic? If so, name the broader topic and match that name with the best-fitting of the established classes. Assign the corresponding class number(s) to the book.

Step 5

If it deals with several subjects that cannot be said to be sub-topics of one broader topic, name the topic that is either most thoroughly covered or of predominant interest to the type of user for whom the library exists. Match that name with the best-fitting of the established classes. Assign the corresponding class number(s) to the book.

Step 6

If it is not a book about something so much as a book of a certain format, name that format (dictionary? encyclopedia? almanac? collection of tables? bibliography?) and match that name with the best-fitting of the established classes. Assign the corresponding class number(s) to the book. "

Features Classification Schemes

Classification schemes use artificial language to represent subjects of the information resources for easy arrangement of the resources. The features of classification schemes are as follows;

Schedules

This refers to a list of all classification main classes division and subdivisions of the subjects and their associated notations. The schedules show the logical or

sequential arrangement of all the subjects available in the classification schemes. The arrangement follows a hierarchical order showing the relationship of specific subject to their parent subject. All the classification schemes have schedules.

Notation

This is a system of symbols which is used in representing a subject of an information resource or a class for example "The arts fine and decorative arts 700 with its sub-division civic and landscape 710, Architecture 720 and Plastic arts Sculpture" using the Dewey decimal classification. These symbols called notation are used in representing the subject. These symbols may comprise of letters of alphabets and plines which were scattered in a subject using the classification schedules in one place. So it shows a term and its various aspects with another. The relative index as used in Dewey Decimal Classification is an alphabetical index which is used in searching for books or topics by classifiers and library users.

Form Divisions

Here knowledge presented in different forms is taken into considerations in the classification of the subject. The form division may be a textbook, dictionary, and encyclopaedia. The form representing the knowledge is placed with the subject. The number used in representing the forms of a book in classification is called Form division or sub-divisions or common -isolates. For example, Literature – Poetry, Prose, Fiction and Drama all are sub-divisions of Literature but there are not separated from their main class "Literature".

Tables

This is another tool used in the classification scheme with the schedules and index. Classification tables provide the list of symbols which are added to a class mark to make it more specific and précised A generalities class

This class in the classification schemes stand for all the books or items which have not been assigned any particular subject class which may be due to their content treatment. Examples are encyclopaedias, dictionaries, general bibliographies etc.

A Generalities Class

This class in the classification schemes stand for all the books or items which have not been assigned any particular subject class which may be due to their content treatment. Examples are encyclopaedias, dictionaries, general bibliographies etc.

subject heading lists LC and LCSH or DDC, classification schemes

CHAPTER SIX

SUBJECT HEADINGS LISTS

A **subject heading** is a term or phrase used to represent a topic, which is found in a list and is used in bibliographic metadata. This serves as an access point to a bibliographic record and consists of a word or a phrase which designates the subject of the item. Subject headings are arranged alphabetically in a catalogue and they direct users to items that deal with these subjects; therefore **a subject heading list** is a collection of authorized subject headings alongside "any references, scope notes, and subdivisions associated with each term or phrase." **Subject heading list**. This is a controlled vocabulary or authority list (e.g. Sears List of Subject Headings). The purpose of such a list is to bring together under one uniform term all the items in a collection on a specific subject. The terms are arranged alphabetically and the relationships between the terms are included in an alphabetical sequence.

The purpose of **subject headings** is to serve as access points by which works can be searched. They act as points of collocation where works on the same topics can be retrieved and displayed together in a catalog. In some subject heading systems, terms may also represent bibliographic forms (e.g., encyclopedia) or literary forms and genres (e.g., Spanish epic poetry). Potentially, anything that can be written about could be a subject heading. **Subject headings** are used to represent concepts, objects, places, events, philosophies, disciplines, activities and processes, organisms, classes of people, ethnic groups, and so forth.

Subject headings have dual objectives: (1) to identify pertinent material on a given subject or topic and (2) to enable users to find material on related subjects. Both objectives pose problems of communication; both demand a set of terms that match, as far as possible, the terms likely to be in the minds of users wishing to locate material on a given topic or in a given discipline.

Information professionals distinguish pre-coordinate indexing—in which appropriate terms are chosen and coordinated into phrases or subject-subdivision combinations at the time of indexing or cataloguing—from post-

coordinate indexing using single concept terms, which are then coordinated by users after the encoded metadata descriptions have been stored. Most subject headings in library catalogs are pre-coordinated, whereas their counterparts in indexes (called descriptors, index terms, or thesaurus terms) are meant to be used in post-coordinated systems. All standard published lists of subject headings were developed with pre-coordinate indexing techniques. Lists of descriptors, called thesauri, are typically used in post-coordinate systems.

List of Subject Headings

The meaning of the list of subject headings is to present a prior list of indicative headings of crossreferences of subject wise lists by which these can be prepared.

The cataloguer determines the subject headings on the basis of these lists of subject headings only.

Subject heading lists are required for determining the cross references and to maintain uniformity and standardization in the subject headings.

Following are the standard subject heading lists used for determining the subject headings in English language:

i. Sears list of subject headings,
ii. A.L.A. List of Subject Headings for Use in Dictionary Catalogues.
iii. Library of congress subject headings
iv. Medical Subject Headings (MeSH) –1954

Sears List of Subject Heading

This list for use in formation of subject headings was printed in the year 1923. This list was initially prepared for use in small libraries and later its scope was extended to small as well as medium size libraries. This list satisfies the requirements of small libraries. Improvements have been made in this list from time to time on the basis of the experience of the various libraries

The objective of this list is to keep the documents of a specific subject under a uniform subject heading. Other than this, those headings are also given in this list after x, xx that are used for the formation of 'see' and 'see also' subject directions.

The headings that are given under or after 'see also' can be used for selecting appropriate headings for the related documents, which are to be catalogued. For example, following entry is given in the list under the 'Catalogues, Classified' heading:

Catalogue, classified see also classification books

X catalogues, systematic; classed catalogues; classified catalogues; XX classification - books; library catalogues.

Appropriate heading is selected from the above entry. If see also item is selected for the subject heading, then see directions will be given from the headings after X.

Provision has also been made in this list for specific entry principle, sub-division of subject's use of geographical names in the subject headings, plural forms of the headings, obvious headings etc. At the same time, rules related to the use of normally popular words and their relevance are also given in it.

Library of congress subject headings

Library of Congress Subject Headings (LCSH) is the list of headings produced from the subject authority file maintained by the United States Library of Congress for use in bibliographic records. It is popularly known by its abbreviation as *LCSH* and is sometimes used interchangeably with the phrase subject authority file. LCSH is a controlled vocabulary. A single word or phrase is chosen to represent each concept that is included, and synonyms are provided as see-references to that heading. It also indicates relationships between and among headings. It is not a true thesaurus, though, because for historical reasons it does not completely conform to the international standard on thesaurus construction. LCSH comprises the complete alphabetic list of terms to be used as controlled vocabulary for subject concepts by the catalogers of the Library of Congress and other libraries to provide such controlled subject access to surrogate records. LCSH has been used in cataloguing since 1898 at the Library of Congress in assigning subject headings to facilitate subject access to the resources in its library catalog.

LCSH comprises a thesaurus or a controlled vocabulary of subject headings which is used by a cataloger or an indexer to assign subject headings to a bibliographic record to represent the subject of a work he/she is cataloguing. LCSH contains the preferred subject access terms (controlled vocabulary) that are assigned as an added entry in the bibliographic record which works as an access point and enables the work to be searched and retrieved by subject from the library catalog database. The controlled vocabulary identifies synonym terms and selects one preferred term among them to be used as the subject heading. For homonyms, it explicitly identifies the multiple concepts expressed by that word or phrase. Cross-references are used with headings to direct the user from terms not used as headings to the term that is used, and from broader and related topics to the one chosen to represent a given subject

LCSH is a multidisciplinary vocabulary that includes headings in all subjects, from science to religion, to history, social science, education, literature, and philosophy. It also includes headings for geographic features, ethnic groups, historical events, building names, etc. *Library of Congress Subject Headings (LCSH)* is the most widely used subject vocabulary in the world. It is the model for many other vocabularies in English and other languages and has been translated into numerous languages. The strongest aspect of *LCSH* is that it represents subject headings of the Library of Congress, the national library of the United States, one of the richest of national libraries of the world. The administrative and managerial machinery of LC has made it possible for *LCSH* to stand out as an undisputed leader. *LCSH* is also used as indexing vocabulary in a number of published bibliographies.

Utility of Subject Heading Lists

The cataloguer receives pre-prepared heading from the subject heading lists. These lists act as a dictionary or collection of subject headings. These lists provide guidelines to the cataloguer information of the subject headings. In other words, the cataloguer gets the benefit of the expenence of many other cataloguers from these lists.

The pre-prepared subject headings in these lists are according to the needs of the users.

Use of these lists can establish co-ordination and uniformity in the library catalogue.

Limitations of Subject Heading Lists

Enough time and effort is required in collection and printing of these lists. Moreover, separate lists have to be prepared for each language.

This procedure of forming subject headings is not very practical as the work of preparing subject headings from these lists involves too much effort and time.

The subject heading lists are never complete and up-to-date because new subjects are introduced every now and then. Hence, it is necessary to include these subjects in the list also.

General subject heading lists are not useful for the specialized libraries. This is the reason for which separate subject heading lists are prepared for these libraries.

Criteria for Evaluating Classification Schemes

Criteria for a Workable Classification Scheme

A good universal classification scheme, apart from having a schedule, notation and index, must have certain features that would make it useable. A good classification scheme must:

It must employ terminology that is clear and descriptive. The arrangement of terms in the scheme should help reveal the significance of the arrangement. The terms themselves should be unambiguous.

It must be flexible and expansive: It must be constructed so that any new subject may be inserted without dislocating the general sequence of classification. It must allow for recognized knowledge in all its ramifications, and it must be capable of admitting new subjects.

It must be systematic: It must bring together related topics in logical, comprehensible fashion, allowing users to easily locate what they want.

It must be so arranged that each aspect of a subject can be considered a separate, yet related part of the scheme and it must be so arranged that new topics and aspects of topics can be added in a systematic manner

It must be inclusive as well as comprehensive. It should include all subjects, that are, have been, or may be recognized allowing for possible additions to knowledge in the future. It must make provision not only for the records themselves, but for every actual and potential use of the records.

Cover the whole knowledge as reflected in the literature. Thus, single-concept and multi-concept documents must be taken care of.

Be systematic, that is related subjects must be brought together as close as possible. All aspects of a subject must be brought together in a systematic manner.

Be regularly revised. Thus, it must have an organisational support that will ensure constant revision. The need to be up to date is important as new subjects appear and existing subjects sometimes need to be expanded because of the growth of the literature.

The scheme must be able to accommodate such subjects. The accommodation of new subjects and expansion of existing subjects, however, should not disrupt the entire arrangement of the scheme in between revisions. The organisation might produce updates which are called additional changes.

Ensure that the terminology used in the scheme is unambiguous. It must be clear and precise to the users and the classifiers.

The nature of the universe of subjects is multi-dimensional, with the development of knowledge; these subjects have to be incorporated in the classification scheme. Thus, a scheme has to keep pace with the developments in the universe to remain relevant and workable.

Faceted Classification

A faceted classification is a classification scheme used in organizing knowledge into a systematic order. A faceted classification uses semantic categories, either

general or subject-specific, that are combined to create the full classification entry.

The faceted classification was adopted from sayer's work and expanded based on the cannons by Ranganathan. (1924 – 49) is a method of breaking the universe of a subject into facets. The faceted classification lists all the main class or facets of every subject and provides rules for developing class number through the facet analysis. Ranganathan believes that any facet of the subject will fit into five fundamental categories namely personality, matter, energy, space and time. In using faceted classification according to Tennis (2011) you cannot add new facets in its proper place to allow new subject fall into a helpful sequence.

Faceted classification does not assign fixed and preconceived slots to all simple and compound subjects as in an enumerative classification scheme.

- Instead notations are constructed, using notations for simple subjects.
- This type of scheme is also called analytico – synthetic which means analysis of subject and synthesis of notational elements to fully express subjects.

Disadvantages

- Notation can become long and complex and may be unsuitable for the arrangement of documents on shelves.
- The problem of citation order can cause difficulty.

CHAPTER SEVEN

ADVANCED STUDY OF LIBRARY OF CONGRESS CLASSIFICATION SCHEME, HISTORY AND DEVELOPMENT OF LIBRARY OF CONGRESS CLASSIFICATION SCHEME

The Library of Congress was established in the year 1800 when the American legislature was preparing to move from Philadelphia to the new capital city of Washington, D.C. The scheme was meant for the arrangement of the collection according to size and by accession number till 1812 when British soldiers set fire on the Capitol, and 35,000 volumes out of 55,000 volumes of the Library of Congress's collections were destroyed. In 1815 Thomas Jefferson sold his collections that had 6,487 books to the Library of Congress. Hence, the Library of Congress adopted the format of Thomas Jefferson'sclassification system and made some modifications to the system until the nineteenth century. It is important to note that, Thomas Jefferson's classification system was adopted from Bacon's Classification of Knowledge In 1897, the Library of Congress shifted to a new building with over one and a half million volumes of books. In 1899, Herbert Putnam was appointed the Librarian of Congress and the largely developed the library of Congress classification scheme. Herbert Putman felt that existing classification schemes should be used in replacement of the scheme used by the Library of Congress because of its inadequacies.

Hence, the Catalogue Division was allocated to continue with the development of a new system of classification under the direction of J. C. M. Hanson and Charles Martel, Chief Classifier. The existing schemes like Dewey Decimal Classification, C. A. Cutter's Expansive classification, and German Halle Schema were scrutinised but none of these schemes was found suitable for classification of Library of Congress collections. Therefore, a new scheme was developed bearing in mind the growth of the collections and the needs of various subject departments. Plans were made and an outline of each class and schedules were designed according to how books on the shelves were arranged. The existing schedules have been expanded and revised to

accommodate new materials or books that will be added to the Library of Congress collections. The name of this new scheme is called Library of Congress Classification (LCC) scheme and work began on the scheme in 1901 and the first volume (E-F- American History) was published. In 1902, the second volume (Z- Bibliographies and Library Science) was published. However, the first outline of the LC scheme was published in 1904. Other schedules of LC were published in 1948 except class K for Law. The first Law schedule (Law of United States) of LC was published in 1969and the last Law schedule (KB- Religious Law) was published in 2004.

The LC scheme was initially made for just Library of Congress collections only and not for any other libraries in the world. It is based on a literary warrant of the late19th and early 20th century. The main subject divisions were by the department of the library of congress and as such the scheme is not in line with the scientific order of subjects.

The LC scheme has its schedule and index but not a general index. Even though the scheme was meant for the library of congress, it has been adopted and used by libraries all over the world. However, in Nigeria, the LCC scheme is mostly used by colleges and university libraries.

Each schedule of LCC has its main classes, sub-classes or a group of sub-classes. The library of congress directed the development of Machine-Readable Catalogue (MARC) format in the 1960s for the exchange of information about bibliographic materials. Since inception, the scheme has been in printed format until 1993 when it was converted from print format to MARC format. However, since 2013 till date, the LCC printed format was converted to the online version which made available the PDF version of LCC schedules. With the availability of online version, LCC and Library of Congress Subject Heading (LCSH) schedules alongside with the instructions on how to use these tools can be accessed freely online. The web or online LCC scheme is reliable, saves times and easy access to schedules and tables.

LC classification is an enumerative scheme that uses 21 letters of the 26 letters of alphabets to represent classes and subject areas. I, O, W, X and Y letters are not yet in use but are kept to accommodate future subjects' additions. Capital

letters are used to denote main or broad classes, while subdivisions use two capital letters. Further subdivisions or subtopics are denoted by cutter numbers thereby making use of decimals. Hence, the LCC scheme uses mixed notation because it uses both letters and numbers.

The structure of LC,

Features of Library of Congress Classification Scheme

The following are features of the LCC scheme;

1. Main Classes
2. Schedules
3. Notation
4. Index
5. Mnemonics
6. Revision

Main Classes

The following are the 21 main classes of Library of Congress Classification Scheme;

Class Discipline

A General Works

B Philosophy. Psychology. Religion

C Auxiliary Sciences of History

D World History and History of Europe, Asia, Africa, Australia, New Zealand, etc.

E History of the Americas

F History of the Americas

G Geography. Anthropology. Recreation

H Social Sciences

J Political Science

K Law

L Education

M Music and Books on 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 Resource (General)

These main or broad classes are further subdivided into subclasses by using two alphabets as shown below; For example, let us use class L and R.

L: Education

L: Education (General)

LA: History of education

LB: Theory and practice of education

LC: Special aspects of education

LD: Individual institutions - United States

LE: Individual institutions - America (except the United States)

LF: Individual institutions – Europe

LG: Individual institutions - Asia, Africa, Indian Ocean islands, Australia, New Zealand, Pacific Islands

LH: College and school magazines and papers

LJ: Student fraternities and societies, United States

LT: Textbooks

R: Medicine

R – Medicine (General)

RA – Public aspects of medicine

RB – Pathology

RC – Internal medicine

RD – Surgery

RE – Ophthalmology

RF – Otorhinolaryngology

RG – Gynaecology and Obstetrics

RJ – Paediatrics

RK – Dentistry

RL – Dermatology

RM – Therapeutics. Pharmacology

RS – Pharmacy and materia medica

RT – Nursing

RV – Botanic, Thomsonian, and Eclectic medicine

RX – Homeopathy

RZ – Other systems of medicine

These classes are further broken down into division or specific subject classes by combining two letters. For example, the following are divisions of subclass LB and RD.

Subclass LB theory and practice of education

LB5-3640 Theory and practice of education

LB5-45 General

LB51-885 Systems of individual educators and writers

LB1025-1050.75 Teaching (Principles and practice)

LB1049.9-1050.75 Reading (General)

LB1050.9-1091 Educational psychology

LB1101-1139 Child study

Schedules

There are 41 LCC schedules for main classes and subclasses. The schedule is made up of preface, content page, outline, tables and index.

Notation

LCC notation stands for the book as a whole. The scheme uses mixed notation that is it uses both letters of alphabet and numbers. A single letter to form the main class, two letters forms the subclass and the numbers like 1-999 to form a subject. It also uses decimals for expansion. For example,

Main classes are denoted by single alphabet:

R – Medicine (General)

Two letters combination for sub-divisions:

RA – Public aspects of medicine

RB – Pathology

RC – Internal medicine

RD – Surgery

These are further subdivided by numbers used as basic;

RD – Surgery

58 – Reparative processes after operations (Physiological)

It is important to note that decimal numbers are used only in a situation when the whole number is not available. Decimals also serve as further subdivisions

Index

The LCC scheme has no general index. Each schedule has its index and it's relative to the concerned class. However, two indexes were published in 1974 by the Canadian Library Association and the US Historical Documents Institute. It is also worthy to note that the web or online version of the LCC has indexed for the entire scheme

Mnemonics

The LCC scheme does not have mnemonic aids. Some double letters have been used to denote the name of subject areas. For example, in class A, AE denote encyclopaedia, AP denote periodical, and AY denotes yearbook. In class M, M means music, ML signifies literature on music and in-class T, T signifies technology.

Revision

Each class of the LCC scheme is revised when needed and the changes made during the revision are published as soon as they occur in the LCC additions and changes published quarterly. However, with the web or online LCC, updates or revisions are done online and are made freely available.

Cutter Numbers

Cutter numbers are numerals that are used to differentiate one title of a book from the others. It differentiates books with common classification elements from each other. Cutter numbers are used for filing, cataloguing and arrangement of books on library shelves. Charles Ammi Cutter developed a table of prearranged numbers used by LCC to create symbols for authors, titles, subjects, countries, states, cities etc. The numbers range from 1-9 which represent an alphabet

During cataloguing and classification of materials, the need for using cutter numbers may arise, in this case, the name of the author, title of book, subject, country state, city etc. are spelt out in numerals instead of an alphabet. The process of using cutter numbers is known as cuttering. For example, to cutter a name, the first alphabet of the author's surname must be written and other letters will be represented by numbers. In practice, cutter numbers are for the first three letters of the authors (surname) name, subject, state, title and country. For example, the cutter number for Nigeria is.N55.

Mixed Notation

This is a type of notation that consists of two or more kind of species of digits such as Arabic symbols and Roman capitals or small and numerals 0-9. Example of a classification scheme that uses mixed notation is Library of Congress Classification scheme. LCC schem classifies by the use of both alphabetical letters and Roman capitals; Arabic numerals or numbers

Enumeration and cuttering

Enumerative Classification

It means that the class numbers for different subjects are enumerated in the schedules. There are no separate supplementary schedules of common isolates to construct a number. A good example of this species of classification is the Library of Congress Classification (LC).

What is a Cutter in the library?

One of the features adopted by other systems, including Library of Congress, is the Cutter number. It is an alphanumeric device to code text so that it can be arranged in alphabetical order using the fewest characters. It contains one or two initial letters and Arabic numbers, treated as a decimal.

Basic Table

Subject Cataloguing Manual: Shelflisting, Cutter Numbers G 63, Background Cuttering for words.

After determining the filing position of the work, use the following table to create the Cutter:

Cutter Table:

After 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**

*After 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**

*After initial letters **Qu***

for the second letter:	**a**	**e**	**i**	**o**	**r**	**t**	**y**
use number:	**3**	**4**	**5**	**6**	**7**	**8**	**9**

*For initial letters **Qa-Qt***

use numbers:	**2-29**

*After other initial **consonants***

for the second letter:	**a**	**e**	**i**	**o**	**r**	**u**	**y**
use number:	**3**	**4**	**5**	**6**	**7**	**8**	**9**

*For **expansion***

for the letter:	**a-d**	**e-h**	**i-l**	**m-o**	**p-s**	**t-v**	**w-z**
use number:	**3**	**4**	**5**	**6**	**7**	**8**	**9**

In the examples below, Cutters without popup links conform to the table above. Cutters for Ilardo, Import, Ito, Ivy, Shillingburg, Singer, and Symposium have been developed when a range of letters in the table has been provided, e.g., **l-m**. Cutters for Scanlon, Qadduri, Qiao, Qvortrup, Chertok, and Clark have been developed when the second letter is not explicitly stated in the table, e.g., **h** after an initial consonant. In most cases, Cutters must be adjusted to file an entry correctly and to allow room for later entries.

Vowels	*S*	*Q*	*Consonants*
IBM .I26	Sadron .S23	Qadduri .Q28	Campbell .C36
Idaho .I33	Scanlon .S29	Qiao .Q27	Ceccaldi .C43
Ilardo .I4	Schreiber .S37	Quade .Q33	Chertok .C48
Import .I48	Shillingburg .S53	Queiroz .Q45	Clark .C58
Inman .I56	Singer .S57	Quinn .Q56	Cobblestone .C63
Ipswich .I67	Stinson .S75	Quorum .Q67	Cryer .C79
Ito .I87	Suryani .S87	Qutub .Q88	Cuellar .C84
Ivy .I94	Symposium .S96	Qvortrup .Q97	Cymbal .C96

Note:

Do not end a Cutter with the numeral 1 or 0.

For ampersands, see G 100, Section 15; for initials, see G 100, Section 11, Subject Cataloguing Manual: Shelflisting.

Cuttering for Numerals.

When Cuttering for Roman or Arabic numerals, use the Cutters .A12 - .A19. However, if entries already in the shelflist have been assigned "documents numbers" (e.g., .A5 for the corporate heading United States. Dept. of ...) Cutter numerals to file directly behind those entries. Because of the infinite range of numbers, choose a Cutter toward the center of the available span when Cuttering for the first numeral in a class. This will allow room for both smaller and larger numbers. Follow this practice even with relatively low numbers since decimal fractions are filed in numeric order before the number

Pragmatic Design of LC and Its Application in Academic Libraries,

LIBRARY OF CONGRESS CLASSIFICATION SYSTEM

The Li brary of Con gress Clas sification sys tem is the sec ond most widely used sys tem in the United States, used by most ac ademic libraries and special li braries. Many of these li braries used the Dewey system orig inally but changed to the Library of Con gress sys tem in the late 1960s and early 1970s.

The Li brary of Con gress Clas si fi ca tion (LCC) sys tem di vides knowledge into twenty-one broad cat egories, us ing a let ter to rep resent each subject field. The letters I, O, W, X, and Y are ex cluded. See Fig ure 6.6 for the out line of the schedules.

The Li brary of Con gress Clas sification sys tem is used much the same way as the Dewey system, ex cept that let ters are substituted for numbers to de note the par ticular sub ject field. To pro vide for ex pansion, dou ble or tri ple let ters, when nec essary, are used for sub classes.

The let ter no tation along with a numerical value completes the LC clas si fi ca tion num ber. On some oc ca sions, an other let ter-num ber combination is nec essary to de scribe pre cisely the sub ject mat ter. For example, the LC classification num ber for the book Training for NonTrainers is HF5549.5.T7. The fol lowing break down shows what each part or num ber rep resents:

H Social science

HF Commerce

HF5549 Personnel management

HF5549.5 Employment management. By topic, A-Z

HF5549.5.T7 Training of employee

Note that .T7 is part of the classification number, not an author number or book number.

Each schedule includes a synopsis first, then the schedule, and finally an index. Because there is no general over all index, it is the responsibility of the classifier

to choose the appropriate schedule for the subject matter in hand. To help find the most appropriate schedule, the LC Classification Outline provides some general help

LC treatment of African topics and appropriateness in Nigeria, Challenges in Nigerian and African Libraries: Observations from the Library of Congress Classification Scheme

The L.C. classification was made around 1900 for books in the Library of Congress. At that time, American knowledge of Africa was very limited.

They had contacts with North and South Africa but did not know much about Black Africa. The publishing output from North and South African was more in relation to other parts of Africa gets about 5 places, 2 may be assigned to Egypt, 2 to South Africa and 1 to others.

Secondly, L.C. was very much influenced by colonialism. Even though America was never a colonizer, the colonial movement affected the LC scheme because it was being prepared during the era of colonialism. Thus, it gives the places to the colonial professions, e.g. British Possessions, French Possessions. The Library of Congress classification had to group the few books from Asia and Africa under colonial headings. The effect is that they produced an unhelpful order for emergent African states.

Books on Nigeria for instance would follow book on Uganda simply because both were British Colonial possessions. Grouping things together under colonial headings is not a helpful way of classifying things. What is annoying is that most of these arrangements persist today. The L.C. editors have not bothered to rethink this section of the classification. At best, they would do a "cosmetic revision" and put "former" beside the old numbers and subjects. L.C. editors should have revised the numbers for Africa (the have the money) and chosen a logical and systematic arrangement of African countries and subjects as Dewey editors should have revised the numbers for Africa (they have the money) and chosen a logical and systematic arrangement of African countries and subjects as Dewey editors have tried to do L.C. in its treatment of Africa

displays a misunderstanding of African culture, history and terminology. Library of Congress editors could not differentiate between a people and a city. For example, Lagos and Yoruba land are listed. Just as Ilorin and Hausa. And they have not bothered to correct these mistakes.

When you have a place provided for African and then "others", there is often a problem of deciding where to classify a subject; whether under "Africa" or 'others". This is because, in some cases, "others" stands for those countries that were not colonial possessions. This is a case of ambiguity in the use of terms and this is not good for classifiers.

The Library of Congress Classification is particularly poor in its treatment of African History. The major short comings as identified by Ejiko include.

(a) Inadequate to allocation of numbers: the whole of Africa is allocated to DT, and although theoretically up to 9,999 numbers could be used, only 995 have in fact been allocated. Hereas some European countries have up to 1,000 numbers e.g. Britain: DA 1- 995, Germany: DDI-905, some African countries have only a decimal number or Cuter number e.g. Chad: DT 546.4, Upper Volta: DT 553. U7. Nigeria has two numbers:

DT 513 Yoruba land, Yorubas

DT 515 Nigeria (Table 1) Ilorin, Benin Empire, Bornu, Lagos, etc.

(b) Division of Africa into areas of Colonial influence: ex-British West African countries are separated from contiguous ex-French West African countries (this has already been discussed at length).

(c) Lack of period divisions: Although there have been improvements in Additions and Changes, still very general periods are given which are the same for each country.

These inadequacies have led some Nigerian Libraries suing (using) L.C. to make their own modifications so as to organize materials in a more rational way. The Lagos University Library, for instance has introduced substantial changes to class DT, and Kashim Ibrahim Library uses a completely different DT schedule compiled by R.D. Young, (1968) and using 1 – 8064 numbers. K.I.L. has also

made substantial modifications for African ethnology, language and literature, and area tables in education, politics and the social sciences.

In the Language and Literature class P, subclass PL is allocated to the language of Eastern Asia, Oceania and Africa. The African languages cover PL 8000 – 8845. It could be seen that several Nigerian and other languages have been omitted from the schedule, e.g. Bini, IBIBIO, Idoma, Ijaw and Urhobo languages to mention a few. The implication of the omission is that a classifier is forced to lump together all the books and other graphic materials written in several languages under one number.

African literature in European languages had inadequate provision, for instance the works of Nigerian authors written in English are classified with English literature (PR). Inadequate treatment for Africa is also evident in the fields of political science, ethnography, education and social sciences.

CHAPTER EIGHT

ADVANCED STUDY OF DDC SCHEME HISTORY AND DEVELOPMENT OF DEWEY DECIMAL CLASSIFICATION SCHEME

Dewey Decimal Classification Scheme

The Dewey Decimal Classification (DDC) scheme was developed by an American librarian, Melvil Dewey in 1876. The first edition of DDC was published in 1876 and titled: A Classification and subject index for cataloguing and arranging the Books and Pamphlets of a library. The first edition consists of 44 pages with 12 pages for introduction, 12 pages of schedules and 18 pages of index. It has grown from 44 pages in its first edition to 3000 pages in its 19th edition which was published in 1979. The 19th edition is in 3 volumes;

I. Volume 1- Tables
II. Volume 2 – Schedules
III. Volume 3- Relative index

The DDC has a manual on how to use DDC which was published in 1982. The scheme is currently at its 23rd edition published in 2011. The DDC is published in abridged and unabridged forms. The abridged form of DDC was published in 1979; it contains 618 pages and 2,179 entries.

The abridged version also shortens numbers used in notation and it is designed for use by schools and public libraries. DDC uses pure notation, this means that it uses only numbers or numerals DDC is currently translated into over 30 languages such as Danish, Portuguese, Turkish, Japanese, and Hindi etc. DDC is hierarchical in nature and it proceeds from general to specific. Books or information materials are arranged by disciplines and a specific subject can appear in any number of disciplines. However, the relative index brings together different aspects of a specific subject.

Pure Notation

The notation of DDC has been at once an asset and a bottleneck. Dewey adopted a pure notation (almost pure with only occasional use of letters) based

on the IndoArabic numerals. This choice of numerals made the scheme universally acceptable, but restricted its capacity to derive only nine places at each stage of division, as the zero is ordinarily used for general works. 3.3.1 Pure Notation This is when a classification scheme uses only one kind of digits in its notational base. This could be either Arabic numerals or alphabetical letters such as Roman capital or small letters. Example of pure notation is;

Arabic numerals 0-9

Roman capitals A-Z

Roman Small letters A-Z

Dewey Decimal Classification scheme uses pure notational system such as 0-9 in dividing the universe of knowledge.

Canon of Pure Notation

The canon of mixed notation states that the base of the notational system of a scheme for classification should use only species of digits" (Prolegomena: 282).

The pure notation is when only one type of symbol is used in the classification such as DDC that uses only numerals as can be seen from the above example DDC uses pure notation, this means that it uses only numbers or numerals

Differences Between the DDC And the LCC Schemes

1. Notation- The DDC has pure notation as it consists of only Arabic numerals while the LC has mixed notation as it consists of a combination of letters A-Z and Arabic numerals eg TA 422
2. Expressiveness- The DDC notation are expressive as one can easily identify the major and subordinate classes by merely looking at he notation. This is not the case with the LC.
3. Enumeration and Synthesis- the DDC is both enumerative and synthetic. It began as an enumerative classification but has slowly through the years introduced elements of analysis and synthesis (number building) the use of analysis and synthesis on a much lager scale was evident in the 17th edition which was first published in 1965. This explains why the latest edition was

published in only 3 volumes. The LC is simply enumerative which is why it is published in as much as 35 volumes.

4. Structure- The structure of the DDC is hierarchical and is based on philosophical order of knowledge. The 10 main classes of DDC correspond roughly to the fundamental disciplines of Knowledge which are philosophy, religion, social sciences, natural science, applied science etc. The LC is a rough breakdown of the entire body of knowledge into 21 classes represented by 21 out of the 26 alphabets.
5. Mode of Division- the DDC has decimal classification because the divisions are in tens. There are 10 main classes, each subdivided into 10 divisions, each further divided into 10 sections and further subdivisions made in tens by the addition of a decimal point. In the LC, the body of knowledge is divided into 21 of the 26 alphabets and further subdivided on enumerative bases using Arabic numerals.

However, both the DDC and LC have mnemonic feature, ie devices to aid the memory for instance, in the LC, the letter G stands for Geography class, while the letter M represents the Music class. Both schemes also have the qualities of flexibility and simplicity in expansion and use.

Analysis and Synthesis

Colon Classification is concerned with analysis and synthesis, no wonder why it is called the Analytico-synthetic scheme of classification. Late Dr.ShiyaliRamamrita Ranganathan was a seasoned librarian who dedicated his time and effort in furtherance of librarianship profession by formulation norms, techniques, laws and theories in the field of librarianship. For example, he wrote a book called five laws of Library Science in 1931, in his book; he stated the five fundamental laws of Library Science. These laws are listed below;

1. First law: Books are for use
2. Second law: Every reader his/her book
3. Third law: Every book its reader
4. Fourth law: Save the time of the reader
5. Fifth law: Library is a growing organisation

Analytico-synthetic scheme, according to Ranganathan, is used 'to denote any scheme in which a compound subject is first analyzed into its facets in the idea plane and later synthesized in the verbal plane and in the notational plane respectively'.

Analytico-synthetic approach in knowledge organization system Analytico-synthetic scheme, according to Ranganathan, is used ‘to denote any scheme in which a compound subject is first analyzed into its facets in the idea plane and later synthesized in the verbal plane and in the notational plane respectively’.

Colon Classification (7th edition) is an analytico-synthetic scheme for library classification. S.R. Ranganathan6 the founder of the scheme had an analytical mind which found some deficiencies in Dewey Decimal Classification (DDC). DDC could not represent expressively all the aspects of a specific subject. He was also aware of the enumerative nature of DDC. It was not possible to enumerate all subjects. The combination of ideas would be a possible alternative.

This was achieved by developing a Theory of Classification. This development consisted of the Postulate of Five Fundamental Categories. According to this Postulate, each isolate facet in a compound subject should be deemed to be a manifestation of one and only one of the Five Fundamental Categories (FC)—Personality, Matter, Energy, Space and Time (PMEST). Colon Classification provides provision to interpolate new main subjects. The scheme also has provision for extrapolation at the end of each species of digits. The last digit of each species was postulated to be semantically empty but to retain its ordinal value.

Analytico-synthetic approach to ontology design The faceted approach allows users to search or browse with greater flexibility. Each of the facets is a mutually independent category and may contain any number of isolates (content oriented metadata/facet element), or subcategories arranged in a hierarchy.

The category hierarchy can then be used to describe, organize, and access the resource by browsing or querying. Mutually independent means each facet describes one single aspect of information object and should not contain the

element of other facets. In a faceted approach one term should denote one concept.10 The faceted approach has been followed while developing this ontology. The subclasses under the class library and information science have been defined and then object properties are used to build relationship among the classes. Compound subjects can be defined to a great extent. As in the faceted scheme of Colon Classification, there are separate schedules for Space, Languages and Basic Subjects, the ontology has treated them as Countries, Languages and Subjects as separate classes. They have relationship with the class library and information science through object properties.

The analytico-synthetic method, advocated by S.R. Ranganathan, has been followed for designing the ontology. In the analytico synthetic method, two processes are used: analysis of the collected term and then synthesizing the concept into a new class. The process of analysis involves controlling the form of the term, making a choice among synonyms, taking a decision whether a concept will be treated as a class or an instance, how are the classes related to each other, what type of property is to be assigned in a particular case etc. The answers to these questions are unified or synthesized to form a new concept. The following steps are followed after the collection of terms (which denote concepts) in a subject domain.

Advantages of the Dewey Decimal Classification (DDC) Scheme

The following are some of the advantages of the DDC Scheme according to Clark (1999);

1. DDC schedules give clear directions on how to use it for number building.
2. DDC arrange concepts ina consistent order and allocated consistent notations. For example, 423 is English dictionaries, 433 is German dictionaries.
3. The scheme allows unlimited expansion after the decimal point to allow for complex subjects.
4. The notation is arranged in hierarchical order from general to specific. For example, 495.6 Japanese is a subdivision of 495 and 495 is a subdivision of 490.

5. Schemes like the Library of Congress provide catalogue cards with pre-assigned DDC numbers.
6. DDC is kept up-to-date by DDC additions, notes and publications.
7. DDC helps in locating books easily on the library shelves.
8. The DDC relative index helps to bring together related ideas which are separated in the classification scheme.
9. DDC is widely used by libraries in the world.
10. The scheme can be used by different sizes of libraries because of it abridge and unabridged edition.
11. It is easier to understand since it was developed by a seasoned professional.

Disadvantages of Dewey Decimal Classification (DDC) Scheme

The following are some of the disadvantages of the DDC scheme;

1. DDC is made up of only ten main classes resulting in lengthy classification numbers making it difficult for small libraries to use.
2. Inconsistent numbering in the DDC scheme is another problem to libraries. For example, classes 400, 800 and 900 are closely related yet separated.
3. The arrangement of classes is confusing because of the separation of major-related subjects like language and literature.
4. DDC is not as easily expandable and as such may not be able to accommodate new subject areas.
5. The repetition of subdivisions in the DDC schedules in most cases confuses classifiers.

International Appeal of DDC

Dewey Decimal Classification scheme is a popular scheme use by various libraries around the world. It is used by large and small libraries due to abridged and unabridged edition and its simple notation. Despite some of the disadvantages of the DDC scheme, many libraries still use it due to its constant availability of various editions and it is also in machine-readable catalogue. The scheme can also be accessed online on web Dewey.

DDC treatment of African topics and appropriateness in Nigeria

History of Classification Schemes and Preferences in Nigeria

Library classification schemes in Nigeria have been studied since the early 1960s, with the Library of Congress Classification being the most widely-used scheme. Nigerian academic libraries use a home-grown system for government documents, which is organized alphabetically based on the document's location of origin. Nitecki (1985) found that DDC was used by about 28% of libraries and LCC for 32%, with various other schemes comprising the remaining 40%. Iwuji (1989) discussed the "gross inadequacies" of both schemes for classifying African subjects, suggesting the need to modify current systems to accommodate Africana topics.

A 2009 report by Oshinaike and Iyoro highlighted the importance of library classification in Nigeria. The results showed that 62% of library types used LCC, 31% used DDC, and the remaining 7% used Universal Decimal Classification, Moy's Law Classification, Oxford Classification, or Barnard's Classification. 7% of respondents had undergone a reclassification during their tenure at the library in which they were employed. 83% of library catalogers had learned the classification schemes in library school, a statistic not rivaled by U.S. LIS education, which often no longer emphasizes the learning of classification schemes while in school (Bello and Mansor, 2011). Lund, Et'al., (2019).

New literature on library classification in Nigerian libraries emerged, covering topics such as catalogers' and librarians' perceptions of classification suitability, search effectiveness, specific collections suitability, and the role of technology on classification. The debate about library classification in Nigeria has culminated in guidelines by government agencies, with the Nigerian University Commission and Nigerian Library Association now recommending the use of Library of Congress Classification in college and university libraries.

CHAPTER NINE

ADVANCED STUDY OF UDC SCHEME HISTORY AND DEVELOPMENT OF UNIVERSAL DECIMAL CLASSIFICATION SCHEME

The Universal Decimal Categorization (UDC) appears to be quite similar to Dewey's classification system, from which it was derived.

The original goal was to arrange a universal bibliography of everything published throughout history using a modified and extended version of DDC (McIlwaine, 2010). As a result, its original function was for documentation rather than shelf organization. It was first published between 1905 and 1907, and then again between 1927 and 1933 in a substantially larger edition. The Universal Decimal Classification Consortium (http://www.udcc.org) now controls all editions and translations of the scheme. The scheme is available in three different versions: small edition, regular edition, and enlarged edition. Libraries with extensive holdings should obtain a license to utilize the Master Reference File's electronic version, which is updated annually. The pocket edition of the scheme may give appropriate coverage for numerous purposes, depending on the subject content of the collection. The pocket edition is quite affordable, and it is utilized to create various scenarios here.

UDC Scheme Structure and Details

The manifold improvements evident in UDC may be summed up as follows:

1) Both DDC and UDC are general classifications. However, special subject editions of UDC are available and each of these can be placed under the category of special classification.
2) The degree of detail achieved by UDC, through common and special auxiliaries, and through other devices, makes it suitable for bibliographic use. It is because of this reason that the editors of UDC call it bibliographic classification as against DDC, which is regarded as a library classification.
3) Though both DDC and UDC are basically enumerative classifications (those that list compound- classes exhaustively), UDC 'is nevertheless a faceted

scheme because of its practice of identifying characteristics common to many categories and arranging them in tables. Each of these is a facet.

In one respect, however, both DDC and UDC are still similar in. that they are Aspect classifications, meaning the various aspects of a subject occur at different places in the sc4erne according to the - context. It is only the index &t collects at one place the otherwise scattered aspects i of a subject. Take the following example from the index to the abridged edition published in 1961 (BS 40OW1961):

- Marine
- biology. 557(26)
- craft 629.12
- denudation 551.35.054
- engineering 629Q621
- insurance 36813
- products 639 etc.

In the above example, Marine is a concept term and according to the context in which it is used, it gets distributed at six different places in the scheme. The example also shows how the index collects at one place all aspects of subject.

There are two kinds of tables in UDC, which contain the total classification: the main tables and the auxiliary tables. The main tables are also called schedules and represent the enumerative aspect of UDC. The auxiliary tables give the analyticosynthetic character to the scheme. Let us now see the main tables of UDC.

The main tables or main schedules containing the various disciplines and branches of knowledge are arranged in 9 main classes, numbered from 0 to 9 (with class 4 being vacant). At the beginning of each class there are also series of special auxiliaries, which express aspects that are recurrent within this specific class. Main tables in UDC contain more than 60,000 subdivisions.

Main classes

0 Science and Knowledge. Organization. Computer Science. Information Science. Documentation. Librarianship. Institutions. Publications

1. Philosophy. Psychology
2. Religion. Theology
3. Social Sciences
4. Vacant
5. Mathematics. Natural Sciences
6. Applied Sciences. Medicine, Technology
7. The Arts. Entertainment. Sport
8. Linguistics. Literature
9. Geography. History

The vacant class 4 is the result of a planned schedule expansion. This class was freed by moving linguistics into class 8 in the 1960s to make space for future developments in the rapidly expanding fields of knowledge; primarily natural sciences and technology.

UDC scheme use in Science and Technology

Advantages of the UDC Classification Scheme.

Classification system developed by the Belgian documentalists and lawyers Paul Otlet and Henri La Fontaine based on Dewey Decimal Classification, DDC (5.edition) and first published (in French) 1905-1907 by the Institut Internationale de Bibliographie.

In the beginning was the development of the DDC and the UDC coordinated and the idea was to establish one system with different editions for different sizes of collections. This idea was later given up (Miksa 2009).

UDC is the most detailed and specific of the general enumerative classification systems. but with pronounced facilities for synthesis. "The Medium Edition is some three times larger than that of the DDC (with greater powers of synthesis) and it is available in 21 languages".

The system has in particular been applied in scientific and technological domains. In Denmark it is used by a number of libraries, including Aalborg

University Library, Roskilde University Library (RUb), Royal School of Library and Information Science (RSLIS) and Technological Knowledge Center of Denmark (DTV).

The publishing history of UDC is complex and presents "something of a bibliographical nightmare".

The UDC classification scheme offers **several advantages** that make it a valuable tool in the field of knowledge organization:

Comprehensive Coverage: The UDC covers the entire spectrum of human knowledge, ensuring that no subject is left unclassified. Its systematic process of dividing classes into ten subclasses allows for precise and specific subject descriptions, achieving high accuracy and detail.

Digital Compatibility: The UDC is highly adaptable to digital formats, making it compatible with modern information systems. Its flexible disposition facilitates seamless conversion into digital computer formats, enabling efficient and automated information retrieval.

Multiple Publication Formats: The UDC is available in various formats, including Full, Abridged, and Web editions. This availability ensures that users can access the classification scheme in a format that best suits their needs, whether comprehensive documentation or concise reference material.

Multilingual and Multiscript Support: The UDC is designed to be applicable in different languages and scripts. Its notation system transcends language barriers, allowing for universal understanding and facilitating its use on a global scale.

Versatility across Fields: The UDC's versatility extends to various fields, including museums, archives, libraries, and documentation centers. Its adaptable nature enables efficient organization and retrieval of information across diverse domains and disciplines.

Easy Updates and Standardized Indexing: The UDC's abbreviated nature and standardized vocabulary make it easily updated. It allows for worldwide standardized indexing by providing a common language for information organization, retrieval, and sharing.

Flexibility for Advancements in Knowledge: The UDC's flexible structure provides ample scope for accommodating advances in knowledge. New concepts can be incorporated by creating new synthesized numbers or inserting new numbers without extensive editorial consensus.

International Understanding: The UDC's notation, comprising numerals and internationally recognized signs, ensures ease of comprehension across different cultures and languages. The decimal notation system also allows for the inclusion of new terms without disrupting the existing classification framework.

Comprehensive Vocabulary and Thesaurus: The UDC forms a carefully organized and comprehensive vocabulary of terms in its index. This feature serves as a classification system and a thesaurus, facilitating effective indexing and retrieval of information.

Suitability for Special Libraries: The UDC's full edition contains detailed subject schedules, making it particularly well-suited for special libraries with specific subject requirements. Special subject editions are also available, providing tailored classification options for specialized fields.

The UDC classification scheme offers numerous advantages, including comprehensive coverage, digital compatibility, multiple publication formats, multilingual and multiscript support, versatility across fields, easy updates and standardized indexing, flexibility for advancements in knowledge, international understanding, a comprehensive vocabulary, and suitability for special libraries. These advantages make the UDC an invaluable resource for efficient information organization and retrieval.

Disadvantages of the UDC Scheme.

While the Universal Decimal Classification (UDC) scheme offers numerous advantages, it also has some disadvantages that should be considered:

Lengthy and Clumsy Notation: The UDC's notation system can be lengthy and cumbersome, making it challenging to use on physical shelves. The long notation strings can complicate the organization of physical materials, potentially leading to shelf arrangement and retrieval difficulties.

Unevenness and Delays in Revision: User participation in the revision process of the UDC has led to inconsistencies and unevenness in certain areas of the scheme. Additionally, the revision process may be slow, resulting in outdated schedules that do not adequately reflect current knowledge or subject developments.

Lack of Conformity and Uniformity: The UDC lacks conformity across different libraries and institutions that utilize it. The interpretation and implementation of the scheme may vary, leading to inconsistencies in classification practices. This lack of uniformity can create information retrieval and interoperability challenges between different systems.

Uneven Coverage and Overly Detailed Expansions: The UDC's coverage of modern topics may be uneven, with some areas receiving less attention or being outdated. Additionally, some expansions within the UDC can be overly detailed, resulting in a classification system that may be overly specific or granular for certain subjects, potentially leading to difficulties in classification and retrieval.

It's important to consider these disadvantages alongside the advantages of the UDC when evaluating its suitability for specific applications or contexts. While the UDC remains a widely used and respected classification scheme, these limitations should be considered to ensure effective knowledge organization and retrieval.

CHAPTER TEN

SPECIAL CLASSIFICATION SCHEME

Choose between Moys Classification for Law Libraries (MOYS Classification Scheme)

Originally, the scheme was written by Elizabeth [Betty] Moys as a thesis to substitute the missing class K for law materials in the Library of Congress Classification and more importantly to improve on the provisions for Law Collections by Dewey Decimal Classification. Known as Moys Classification Scheme for Law Books- the scheme was devised based in part on existing Classification Schemes, Library of Congress Classification Scheme and Dewey Decimal Classification Scheme to express the unique characters of law collections and their categories. Elizabeth M. Moys (Betty) started work on the scheme as a project leading to her becoming a Fellow of the Library Association (Great Britain). After university graduation, library training, and experience as a law cataloguer in a leading London law library, Moys worked in two African countries.

In 1961, while at the University of Ghana, Moys produced a classification scheme (Classification Class K, Law), "based on one used by a College Library in London".

Three years later, while at the University of Lagos, Nigeria, Africa,[1963-65] she developed A Classification Scheme for Law Books which she submitted in 1965 for Fellowship of the Library Association. The lack of a classification scheme for law materials led many law libraries to devise their own home made schemes to suit their purpose- information retrieval. Undeterred by this development, while simultaneously building up the schedules of her scheme, the challenge provided her the opportunity of classifying the law collection. In point of fact, as Tuyo further reveals, it can reasonably be assumed that the University of Lagos Library was the first to use the scheme for its law collection. The LCC made substantial effort to correct this anomaly by providing the class ""K" for law books but this effort was inadequate because it was not robust enough to take care of the ever growing areas of law. Therefore, the demand for a legal

classification in Commonwealth countries led to the publication of Moys Classification Scheme for Law Books by Butterworth's in 1968. The second edition was published in 1982 with the new title Moys Classification Scheme for Law Books; the 3rd and 4theditions, published in 1992 and 2001 respectively, were titled Moys Classification and Thesaurus for Legal Materials while the 5th edition edited by Diana Morris, Helen Garner, Sarah Wheeler and Elizabeth M. Moyswas published by De Gruyter Saur in 2012. The classification scheme was adopted by law libraries in Australia, New Zealand, Canada, the UK and Nigeria. In her will, Moys bequeathed the copyright and therefore the royalties from the Moys Classification Scheme to the British and Irish Association of Law Librarians (BIALL) so that the work may be continued

Basic Structure and Arrangement of the Scheme

Typically, Moys Classification Scheme is divided into the following parts namely: Synopsis - provides a very useful overview of how to use the scheme. It is particularly useful as a guide on howto go about classifying legal information.

Schedules-The schedule contains the list of all the main classes and sub-classes of the scheme with their corresponding notation: the notation is a sign or symbol in a definite order representing disciplines, and subjects listed in the schedule; Tables - used to build numbers; Index of jurisdictions -gives the classification numbers for particular countries and the cutter numbers for countries when dividing by jurisdiction A-Z. The scheme also provides in its preliminary pages how cutter numbers are to be constructed, and, Index – Thesaurus -an alphabetical list of subject provides quick access to the schedule.

The main principles according to Fear, (1999) are:

- General always comes before specific;
- Material is primarily arranged by jurisdiction;
- Common law jurisdictions are special in that they are homogeneous and their materials should therefore be kept together;
- Primary and secondary materials are separated;
- Primary materials are arranged by type of material;

- Secondary materials are arranged by subject and are grouped into three broad categories: general subjects; public law subjects; and private law subjects

Basic Structure Of The MOYS Classification Scheme

Basic General Classes

K - Journals and reference books

KA – Jurisprudence

KB - General and comparative law

KC - International law

KD - Religious legal systems

KE - Ancient and medieval law

KF-KN - Common law

KF - British Isles

KG - Canada, US, West Indies

KH - Australia, New Zealand

KL - General

KM - Public law

KN - Private law

National Library of Medicine classification

The National Library of Medicine (NLM) classification system is a library indexing system covering the fields of medicine and preclinical basic sciences. The NLM classification is patterned after the Library of Congress (LC) Classification system: alphabetical letters denote broad subject categories which are subdivided by numbers.For example, QW 279 would indicate a book on an aspect of microbiology or immunology.

The one- or two-letter alphabetical codes in the NLM classification use a limited range of letters: only QS–QZ and W–WZ. This allows the NLM system to co-exist with the larger LC coding scheme as neither of these ranges are used in the LC system. There are, however, three pre-existing codes in the LC system which

overlap with the NLM: Human Anatomy (QM), Microbiology (QR), and Medicine (R). To avoid further confusion, these three codes are not used in the NLM.

The headings for the individual schedules (letters or letter pairs) are given in brief form (e.g., QW - Microbiology and Immunology; WG - Cardiovascular System) and together they provide an outline of the subjects covered by the NLM classification. Headings are interpreted broadly and include the physiological system, the specialties connected with them, the regions of the body chiefly concerned and subordinate related fields. The NLM system is hierarchical, and within each schedule, division by organ usually has priority. Each main schedule, as well as some sub-sections, begins with a group of form numbers ranging generally from 1–49 which classify materials by publication type, e.g., dictionaries, atlases, laboratory manuals, etc.

The main schedules QS-QZ, W-WY, and WZ (excluding the range WZ 220–270) classify works published after 1913; the 19th century schedule is used for works published 1801–1913; and WZ 220-270 is used to provide century groupings for works published before 1801.

Overview of the NLM Classification Structure

Preclinical Sciences

QS Human Anatomy

QT Physiology

QU Biochemistry

QV Pharmacology

QW Microbiology & Immunology

QX Parasitology

QY Clinical Pathology

QZ Pathology

Medicine and Related Subjects

W Health Professions

WA Public Health
WB Practice of Medicine
WC Communicable Diseases
WD Disorders of Systemic, Metabolic, or Environmental Origin, etc.
WE Musculoskeletal System
WF Respiratory System
WG Cardiovascular System
WH Hemic and Lymphatic Systems
WI Digestive System
WJ Urogenital System
WK Endocrine System
WL Nervous System
WM Psychiatry
WN Radiology. Diagnostic Imaging
WO Surgery
WP Gynecology
WQ Obstetrics
WR Dermatology
WS Pediatrics
WT Geriatrics. Chronic Disease
WU Dentistry. Oral Surgery
WV Otolaryngology
WW Ophthalmology
WX Hospitals & Other Health Facilities
WY Nursing
WZ History of Medicine
19th Century Schedule

The National Library of Medicine (NLM) classification scheme is becoming more popular in classifying medical collections among medical libraries in Nigeria. This may be as a result that Nigerian University Commission (NUC) and Medical Council of Nigeria (NMC) recommended the scheme for medical libraries in Nigeria. The use of The National Library of Medicine (NLM) classification system by librarians have been found to be very easy and not at all cumbersome, the focus of this chapter is to further simplify the use of classificatio scheme as it focuses more on Nigeria collection as our own country. Also, there is need for the medical librarian to use the knowledge of classification to keep update in development in the subjects of medicine. This is because, medicine as a subject is very dynamic and the emergence of new areas of medical subject is inevitable.

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About the Book

Reading in advanced Classification is traditionally concerned with handling of "behind the scene" activities of library responsibilities associated with making available library resources and preparing them for use. This book has elaborately dissected professional services functions in libraries, not excluding the application of emerging technology in these functions. These book has efficiently taken cognizance of all aspects of classification services and serves as a major contribution to the existing literature in this area of librarianship.

About the Author

HUSSAINI MUSA is a practicing librarian and works at the University Library Services, Federal University of Technology, Minna. He holds a doctorate (PhD) in Library and Information Science, from the prestigious International Islamic University Malaysia, a Master of Library Science (M LS) and a B. LIS., Library and Information Science, Ahmadu Bello University, Zaria. He worked as a Librarian at the National Commission for Museum and Monument, Minna branch, before joining University Library Services, Federal University of Technology, Minna in 2007. Is a very active member of the Nigerian Library Association NLA Niger State Chapter. Hussaini practices as a Certified Librarians' Registration Council of Nigeria (LRCNI). His wealth of experience in the practice of librarianship and as a teacher of DLIS students at Diploma at the Niger State Institute of Teacher Professional Development and also a lecturer of Advanced Classification to Masters Students in the Department of Library and Information Science at the Federal University of Technology, Minna has helped him to write this book, "Reading in Advanced Classification". His research interest is in library administration, cataloging and classification, bibliography arid user services. He has published research articles in reputable journals. Dr. Hussaini is married and blessed with many children.

DR. HUSSAINI MUSA is the Head of the Technical Service Division of the University Library Services Federal University of Technology, Minna.

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