



**BACHELOR OF LIBRARY AND INFORMATION SCIENCE**

**PAPER DELB1102T**

**KNOWLEDGE ORGANISATION AND INFORMATION PROCESSING :Theory**

**UNIT NO. 1 (Part I : Library Classification)**

**Department of Distance Education  
Punjabi University, Patiala**

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**LESSON NO.**

**UNIT NO. 1**

- 1.1. Concept of Library Classification and Definition**
- 1.2. Need and Purpose of Classification**
- 1.3. Theory of Subjects: Basic, Compound and Complex Subjects**
- 1.4. Models of Classification Scheme: Enumerative and Faceted: Their Merits and Demerits**
- 1.5. Notation: Need, Purpose and Qualities**
- 1.6. Major Classification Schemes**
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- 1.7. Classification Theory: Canons, Principles of Sayers, Bliss and Ranganathan.**
- 1.8. Development and Trends in Classification: Role of Computers.**
- 1.9. Concept of Call Number: Class, Book and Collection Number.**

## CONCEPT OF LIBRARY CLASSIFICATION AND DEFINITION

### Structure

#### 1.1.0 Objectives

#### 1.1.1 Introduction

#### 1.1.2 Library Classification

#### 1.1.3 Meaning and Process of classification

#### 1.1.4 Array of Classes

#### 1.1.5 Chain of Classes

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#### 1.1.0 Objectives :-

This lesson attempts to introduce you to the basic Concept of library classification and its importance in the library. After studying this lesson you would be able to define and understand library classification.

#### 1.1.1 Introduction :-

It is necessary for the students to be clear about the connotation of the term classification as well as the way the term is applied to different phases of work connected with organisation of reading materials in libraries. Students should learn to distinguish between library classification schemes and classification process in libraries on the one hand, and different phases of the classification process on the other.

The following terms are used to denote various schemes of library classifications:

Colon Classification (CC.)

Dewey Decimal Classification (D.D.C. or D.C.)

Universal Decimal Classification (U.D.C.)

Subject classification (S.C.)

Bibliographic Classification (B.C.)

Expansive Classification (E.C.)

Library of Congress Classification (L.C.)

The following terms denote different phases of classification work in libraries:

Library Classification  
Classification of Subjects  
Knowledge Classification  
Book Numbering

### **1.1.2 Library Classification**

In ancient Rome, the term 'Classis' was used to refer to a group of persons possessing certain qualities in common as well as belonging to the same class.

Library Classification is the name given to the process of classification of subjects embodied in books and classification of books as physical entities against knowledge entities. The term book classification is sometime used as synonymous to library classification.

The classification of subject embodied in books involves classification of knowledge and is to be distinguished from classification of books as physical entities.

Knowledge classification forms part of the process of classification of subjects.

Book numbering is the term used sometimes to indicate classification of books in the ultimate subject.

Thus library classification includes

- (i) Classification of Subjects, which in turn, includes classification of knowledge.
- (ii) Assignment of Book Numbers.

### **1.1.3 Meaning and Process of Classification**

All rational activity by man involves classification. Since most of the social and intellectual activity in human beings is guided by reason, Classification plays an important role in human life and its progress. As such classification is studied by philosophers, scientists, taxonomists, librarians and other scholars. Philosophers study it as part of the study of formal logic. Scientists, thinkers, taxonomists, librarians study and apply it in practice.

Classification is the process by which we group things according to their likeness and separate them according to their differences. This is done by examining what makes things appear similar or different. Different characteristics are applied as the basis for finding out the likeness or unlikeness between things. A characteristic is an attribute by which concepts are grouped and subjects divided.

Dr. S.R. Ranganathan, the great Indian librarian, author of the Colon Classification Scheme writes in his book 'Prolegomena to Libray Classification', third edition (1967) that the term is used in five diferent sense. We shall describe the five meanings of the term classification mentioned by Dr. Ranganathan.

**First Meaning**

According to Dr. Ranganathan the first meaning of the term classification is division.

Division has been defined by Dr. Ranganathan as the Process of sorting entities of a universe into sub-aggregates on the basis of a preferred characteristic, or putting like entities into the same sub-aggregates and unlike entities into different sub aggregates.

Division or classification in sense I may be illustrated by the following example :

If students in a school are grouped on the basis of games they play, they will get divided into same groups. This process will be called division of universe of students into sub-aggregates or groups on the basis of the characteristic game.

The above definition of the term Division or Classification in sense I has been introduced in the following terms :

1. Universe
2. Sub-Aggregate
3. Characteristic
4. Like
5. Unlike

**Universe**

A Collection of entities is called an aggregate. An aggregate under consideration is called a universe. In philosophical classification it is called genus.

Thus, the collection of students in a school in the above example is called universe of students.

**Sub-aggregate**

When a universe of entities is divided, groups of entities is formed. Each such group is called sub-aggregate. In philosophical classification it is called species.

Thus, the students who joined the group of cricket players in the above example was a sub-aggregate (or a group or a class).

**Characteristic**

Characteristic is defined as an attribute or a group of attributes with reference to which the likeness or unlikeness of entities can be determined.

Thus in the example given above game was used as characteristic for dividing or classifying the universe of students into sub-aggregates or groups or classes. Similarly age, height, weight, education, caste, etc. can be used as characteristic to classify or divide the same universe of students.

Size, shape, weight, colour of the binding, type of binding, accession number, name of author, title, subject, etc. are the characteristics that could be used for classification of Universe of Books.

Characteristics are of two kinds:-

1. Natural Characteristics
2. Artificial Characteristics

Natural characteristics are those which are inherent to and inseparable from the entities. For example, height, age, weight and caste of boys are natural characteristic for division of universe of boys.

Artificial characteristics, on the other hand, are those characteristics, which are not inherent to the entities. For instance, the colour of the dress of boys in a school is an artificial characteristic for division of the universe of boys.

### **Like**

Like entities are those, that possess a characteristic in common. For example, all those students who play cricket are like, respect to the game they play.

### **Unlike**

Unlike entities are those that do not possess a characteristic in common. For example, the boys who play hockey are unlike those who play cricket.

### **Second Meaning of the Term classification**

In the second sense, according to Dr. Ranganathan, classification means assortment.

Let us consider the meaning assigned to the assortment.

Suppose the universe of students in a school is divided by the characteristics of age and the following five groups are formed :

Group I Boys born before the year 1970

Group 2 Boys born after the year 1970

Group 3 Boys born before the year 1971

Group 4 Boys born before the year 1972

Group 5 Boys born before the year 1973

The resulting five groups of sub-aggregates can be arranged in many ways. A few of the possible arrangements are given below

1,	2,	3,	4,	5,
5,	4,	3,	2,	1,
1,	5,	2,	4,	3,
5,	1,	4,	2,	3,

Assortment is the name given to the process of dividing a universe into groups of classes and arranging the resulting groups or classes in definite sequence.

Thus classification in this sense involves

1. Division of a universe into classes or groups.
2. Arrangement of the resultant classes in a definite sequence.

Philosophers and scientists generally use classification in this sense. We therefore, give below a few important definitions of the term classification philosophers, scientists and others.

A definition first introduced by Huxley, modified by Jevons, added to by Jast, and quoted by W.C. Berwick Sayers in his book. "*A Manual of Classification*" at page 7 is as follows.

"By the classification of any series of objects is meant the actual or ideal arrangement together of those which are like and the separation of those which are unlike. For the purpose of this arrangement being, primarily to facilitate the operation of the mind in clearly conceiving and retaining in the memory the characters of the objects in question, and the recording of them that they may be conveniently and quickly referred to, and, secondarily, to disclose the correlation of laws of union of properties and circumstances."

Thus classification involves

1. Grouping of like entities.
2. Their separation from unlike entities.
3. Arrangement of entities in each group.
4. The purpose of the arrangement being.
  - (a) To facilitate memorisation and to record them for reference.
  - (b) To reveal the laws governing the union of their properties and circumstances.

According to Carveth Read classification is a "mental grouping of facts or phenomenon according to their resemblances and differences so as to best serve some purpose."

A Broadfield in his *Philosophy of Classification* defines classification as a series of system of classes arranged in some order according to some principle or conception, purpose or interest or some combination of such. The term is applied to the arrangement either of the class names, or of the things, real or conceptual that are so classified. The term 'classification' is also by derivation and use, the name for classifying or arranging of classes or things as a process or method.

### **Third Meaning**

Classification, in the third sense, means division of universe into groups (or sub aggregates) and arrangement of the groups in a definite sequence or ranks, plus representation of each entity by ordinal numbers so as to mechanise the sequence.

Classification in this sense embraces three distinctive processes in the following order:

1. Division of universe by a characteristic into groups or classes.
2. Arrangement of the resultant classes or groups in a definite sequence.
3. Assignment of ordinal numbers to classes by a numbering system or notation.

#### **Fourth Meaning**

Sense 4 of classification emerges as discussed in sense 3 where complete assortment is taken of an amplified universe when entities and the pseudo-entities arising in the process successive assortment stand arranged in one filiatory sequence, each with its class number.

Classification in this sense is limited in use.

#### **Fifth Meaning**

The meaning of classification in 5 “Is classification in sense 4 with all the entities removed but only the pseudo-entities or classes retained each class having the number representing it.”

The following assumptions have been made in this regard:

- (a) The individual entities do not occur in complete assortment.
- (b) Classes take place of entities.
- (c) Each class including the original universe, is a class of classes.

Classification in sense 5 is practised widely. Essential features of library classification, are as follows:

1. A universe of subjects is divided into classes.
2. The resultant classes are arranged in a definite sequence; and
3. The arranged classes are denoted by a system of notation.

For example universe of physical sciences may be divided into the following class:

Mathematics, Physics, Engineering, Chemistry and Technology.

The above classes may be arranged in the order shown above and represented by number of a system of notation.

For example

Mathematics may be represented by B

Physics may be represented by C

Engineering may be represented by D

Chemistry may be represented by E

Technology may be represented by F

We shall describe three other terms.

#### **1.4. Array of Classes**

When a universe is divided by a characteristic, groups or classes (sub-aggregate) are formed. The resulting classes are arranged in a definite sequence. Such classes are called array of classes.

Dr. Ranganathan defines array of classes as the classes derived from a universe on the basis of single characteristic at any one step in the progress towards its complete assortment and arranged in the preferred sequence.

(Prolegomena, page 61)

Human knowledge can be divided into three broad classes as follows:

1. Natural Science
2. Humanities
3. Social Sciences

The three classes constitute an array of classes and can be shown diagrammatically as follows:

#### **Universe of Knowledge**

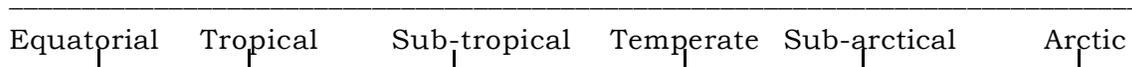


Similarly, the universe of world may be divided by the characteristic of Zones into the following classes :

- Equatorial
- Tropical
- Sub-tropical
- Temperate
- Sub-arctical
- Arctic

These classes can be diagrammatically shown as under:

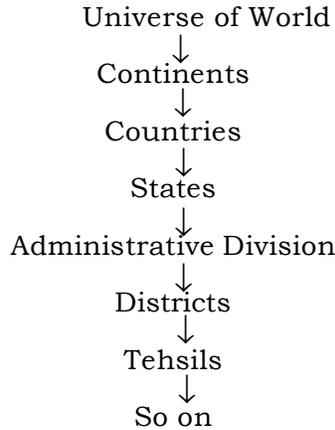
#### **Universe of World**



#### **1.1.5 Chain of Classes**

When a universe is divided by a succession of characteristics till all possibilities of further division is exhausted, a chain of classes is formed. A chain is sequence of classes and is called a link.

For example the universe of world can be divided into continents, the continents can be divided into countries, countries into states, states into administrative divisions, divisions into districts, districts into tehsils, and so on till possibilities of further division are exhausted. The chain of classes can be diagrammatically represented as under :

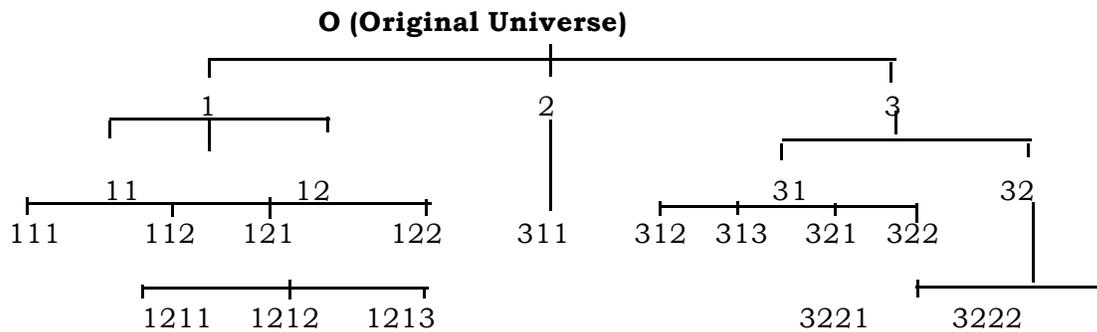


**1.1.6 Filiatory Sequence**

When a universe is divided by a single characteristic, array of classes is formed, and when the universe is divided by succession of characteristics, chain of classes is formed. When the classes and/or entities in arrays and chains are arranged according to the closeness of their relationship it is called filiatory sequence.

As books in a library can only be arranged in on line, the classification system which is used to arrange books on library shelves should have its classes arranged in one line only.

Given below is a diagram showing arrays and chains of classes and entities:



Filiatory sequence of the classes and entities represented in the species above diagram will be as follows :

- 0    1    11    111    112    12    121    1211    1212    1213    122
- 2    3    31    311    312    313    32    321    322    3221    3222

**1.1.7 Further Readings :-**

1. Ranganathan (SR) : Prolegomena to Library Classification, Ed. 3, 1967 Part C, Pages 47 to 80
2. Srivastava (AP) : Theory of knowledge classification in libraries Page 1 to 11
3. Krishan Kumar : Theory of classification, 4th ed. ND; Vikas 2006.
4. C.K. Sharma and Anil K. Sharma : Library Classification, 2007.

## **Need and Purpose of Classification**

### **Structure**

#### **1.2.0 Objectives**

#### **1.2.1 Introduction**

#### **1.2.2 Need of Classification**

#### **1.2.3 Filiatory Arrangement**

#### **1.2.4 Characteristics for Classification of Books**

#### **1.2.5 Purpose of classification**

#### **1.2.6 Further Readings**

#### **1.2.0 Objectives :-**

The study of this lesson will help you in familiarising with need and purpose of the Library Classification. Various kinds of Readers approaches have been discussed.

#### **1.2.1 Introduction :-**

Libraries are established to facilitae and promote use of books. To achieve these ends, libraries acquire books, bring them to the notice of interested users and facilitate their identification and location by the users with minimum of effort and least wastage of time. Libraries also enable readers to use their materials within and outside their premises and offer personal and other services to bring about meaningful contact between the books and their users.

Two main devices are used by libraries to bring books to the notice of users and to facilitate their identification and location on the shelves. The devices are: classification and cataloguing. Library Catalogue is a list of books in a library in which location of the books on the library's shelves is given. The objective of the catalogue is to show what a library has and where a required item may be found.

Classification on the other hand is an artificial device used for arranging books on shelves of a library in a helpful order.

#### **1.2.2 Need for Classification**

Whenever there is a collection of documents there is need to arrange them

in a helpful order, because it is not possible to locate the required documents in a collection unless they are so arranged systematically. In a small library, a librarian may be able to lay his hands on a required document immediately; but he will certainly face difficulty in locating documents of a particular subject or subject group. In libraries, where the number of books generally exceeds many thousands and where users mostly have to find the required documents by themselves the arrangement of documents must satisfy certain requirements. Some of the requirements are as follows:

#### 1. The Reader's Approach

A reader normally comes to the library to read, consult or borrow either a particular book or a book on a particular subject. A particular book can be identified by the name of its author or its title. Thus, generally three features of a book are used by readers to indentify their requirements :

1. Author's name
2. Title
3. Subject

Experience has further shown shat a majority of readers even when they approach books by the name of their respective authors or titles are generally interested in the subject matter of the books, and the only arrangement that satisfies their needs to the maximum is therefore, the subject arrangement.

### **1.2.3 Filiatory Arrangement**

The arrangement of documents should be self-explanatory as well as easy to understand so that a user does not normally have to seek the assistance of library staff to locate the required documents; and his time is not unnecessarily wasted. This is possible if the system of arrangement assembles subjects in the accepted order of their relationships or filiations. That is to say that the arrangement of subjects is filiatory. For instance, books on the history of Punjab are expected to be placed after the history of India. Similarly books on the history of Punjab up to 1849 are expected to precede books on the history of Punjab up to 1963.

Another example of filiatory arrangement is the following order of subjects:

- B. Mathematics
- C. Physics
- D. Engineering
- E. Chemistry
- F. Technology

#### **1.2.3.1 Mechanisation of the Arrangement**

The place of a book should be permanently fixed so that acquisition of new books does not disturb the existing order and a book reaches its assigned place on the shelves of a library when returned by a reader after use. That is to say the arrangement of the books should be mechanised.

#### **1.2.4. Characteristics for Classification of Books**

A system of classification which can satisfy the above three requirements has to use subject matter of books as the characteristic for their classification because all the other characteristics prove less helpful to users. Let us consider the various characteristics which can be used to identify books, and which can be employed to arrange books on the shelves.

The following are some of the common characteristics of books:

- a. Size
- b. Shape
- c. Weight
- d. Colour of the binding
- e. Type of binding
- f. Accession number
- g. Name of author
- h. Title
- i. Subject

An examination of the characteristic number, 'a' to 'e' show that they do not help users to identify or locate books of their interests because these characteristics generally are irrelevant to the interests of the users. Besides, they may be indeterminable.

They often undergo changes with the passage of time. Characteristics at serial number 'f' to 'h' also fall short of identification of books in large libraries. The characteristics are, therefore, not used for classification of books in modern libraries. Subject arrangement has been recognised as the most appropriate characteristic for classification of books. Characteristics numbering 'f' to 'i' are briefly discussed below:

#### **Accession Number of Books**

Books which are arranged by their accession numbers do not prove helpful to users because the accession numbers are purely arbitrary numbers. Accession numbers are assigned to books in the order in which books are received in the library. As such users cannot normally know or remember them. Besides, arrangement of books by accession numbers scatters related books.

Accession number is therefore, not chosen as a characteristic for classification

of books in libraries. The numbers may, however, be used for different copies of the same book on the shelves.

### **Name of the Author of Books**

If books in a library are arranged by the names of their respective authors then only those readers who know or remember the names of the authors can locate the required books. The other readers cannot do so. Since the percentage of readers who know or remember names of authors of all the books in which they may be interested is low, arrangement of books by the names of their respective authors does not prove helpful to the majority of users. Author arrangement also scatters related books. For example, the following books which have no inherent relationship will, if arranged by the names of their authors, come together whereas, those which are related to them will be found dispersed.

1. JACK (Adolphus A): Essays on Novels, as illustrated by Scott and Jan Austen.
2. JACOB(Emond) : Theology of Old Testament.
3. JAFFA (Harry) : Equality and Liberty.
4. JAGDISH RAJ : Mutiny and British Land Policy in Northern India 1856-1868
5. JAHAN (J.Muntu): An outline of the Neo-African Culture.
6. JAKOB(Max) : Heat Transfer
7. JAMES (CL) : Case for West Indian Self-Government.
8. JEAN(Maryln T) : Status in the Stone.
9. JONES (Fliford M) : New Testament illustrations
10. JUNG (Carle) : Answer to Job.

### **Titles of Books**

Like the names of authors, exact titles of books are sometime difficult to remember. Arrangement of books by their respective titles scatters related books. It does not prove helpful to majority of users. Titles of books are, therefore, not chosen as a characteristic for classification of books in libraries.

### **Subjects of the Books**

Most readers use books to acquire knowledge or information. Knowledge or information is represented by the subject matter of books. Arrangement of

books by their respective subject, therefore, satisfies the need of majority of library users. Subject arrangement of books also brings related materials together. Besides, readers are not required to know or remember accession numbers, titles or names of authors of the books in which they may be interested.

**Subject of a book is, therefore, chosen as the characteristic for its classification in libraries.**

It will be seen that it is easy and simple to arrange books by the respective accession numbers, titles or names of authors. On the other hand arrangement of books by their respective subject presents many difficulties, as we shall see later. Notwithstanding the difficulties, books are classified in the libraries on the basis of their subject matter.

### **Classification of Subject(Library Classification)**

Certain Processes have to be gone through to classify the subject matter of books and to mechanise the classified arrangement. Let us consider these processes.

The process of classification in libraries consists of:

1. Classification of the exact or specific subject of the book.
2. Individualisation of the book among books in the same, specific or ultimate subject.

The first part consists of fixation of a definite place for each subject among other subjects on the basis of filiation or relationship of the subject with all the other known and unknown subjects. To fix a definite place of a specific subject among all the other subjects, a map of all possible specific subjects has to be drawn. But this map has to be drawn in a single straight line in which location of each specific subject is determined by the filiations or relationships of the subject with all the other subjects. Thus distance between two specific subjects shows the extent of the filiation or relation of the subject. The closer the relation between the subjects, the lesser the distance between them. Such a map of subjects is called a scheme of classification.

The other part of the process of classification of subjects consists of:

- (i) Determination of specific subject of the book
- (ii) Determination of an appropriate place for the specific subject in the scheme of classification.

**Classification work in libraries, therefore, consists of:**

1. Determining the specific subject of a book.
2. Finding the place of the subject in the scheme of classification.

The study of the theory of library classification is mainly concerned with design and formation of a scheme of library classification and the principles methods and rules which govern the making of such a scheme. The maker of a scheme of classification is called a classificationist.

Determination of specific subject of a document of book and determination of location of the subject among the other subjects in a scheme of classification is called practical classification. The person who does this work is called a classifier.

### **1.2.5 Purpose of Classification**

The purpose of classification is to arrange things in the most convenient order. It is essential to mention that behind all classification, there is always a purpose. The same things can be classified for different purposes by different persons in different ways. A cashier arranges coins according to their value while a numismatic arranges them in a historical sequence.

It is essential that library classification should make each documents available, in other words one should be able to locate a document immediately. It must be obvious that libraries exist for the readers and the major task of the modern Librarian is to bring together the reader and the book. That means he has to see that maximum use is made for the collection of the library, which consists of books and other records. The utility of collection lies in the proper use by the readers. Mere collection does not warrant any effective use. Proper steps for making the resources of the library known to its readers are essential. If these steps are not developed the library resources involving a considerable expenditure of time and money will be wasted. Classification achieves this aim by (i) bringing the subject matter of books to the notice of users, (ii) arranging books in a helpful filiatory order on the shelves of a library, and (iii) mechanising the classified arrangement for quick and easy retrieval.

Effectiveness and efficiency of a scheme of classification may be judged by the following criteria:

1. How far does the classificatory order of books succeed in revealing and displaying subject content of books?
2. Whether all books on a subject are brought at one place?
3. Whether it arranges books on related subjects in a filiatory helpful order?
4. Whether the classificatory order admits of its representation by a system of notation to facilitate retrieval and restoration of books on the shelves?
5. Whether it saves the time of users?

We have described the need and purpose of classification in libraries. In the description certain technical terms have been used which we shall define and explain later. The terms are as follows :

1. Classification
2. Specific subject
3. Filiatory arrangement
4. Characteristic
5. Notation

#### **1.2.6 Further Readings :-**

- 1 KRISHAN KUMAR : Theory of Classification 4th ed. ND; Vikas 2006.
- 2 MILLS (J) : A Modern Outline of Library Classification, Chapter I Pages 1-7
- 3 PALMER(Behind) : The Fundamentals of Library Classification and WELLS(AJ) Chapter I, Pages 17-22.
- 4 SEN GUPTA (B) and OHIDEDAR (AK) : Library Classification, Chapter I, Pages 1-13.
- 5 C.K. Sharma and and Amit K. Sharma : Library Classification. 2007

## **Theory of Subjects: Basic, Compound and Complex Subjects Structure**

### **1.3.0 Objectives**

#### **1.3.1 Introduction**

#### **1.3.2 Types of subjects**

##### **1.3.2.1 Simple Subject**

##### **1.3.2.2 Compound Subject**

###### **1.3.2.2.1 Isolate**

###### **1.3.2.2.2 Facets**

###### **1.3.2.2.3 Five Fundamental Categories**

##### **1.3.2.3 Complex subjects**

#### **1.3.3 Further Readings**

### **1.3.0 Objectives :-**

In this lesson you will learn about the theory of various kinds of subjects i.e Simple, Compound and Complex ; and concept of Five Fundamental Categories.

#### **1.3.1 Introduction :-**

In this lesson we shall describe the core of the theory of library classification. This theory was developed by Dr. S.R Ranganathan and described by him in his book "*Prolegomena to Library Classification*". The students are advised to consult the "*Prolegomena*" third edition to gain proper understanding of the theory of classification.

#### **1.3.2 Types of Subjects**

In library classification we classify books and other material according to their subjects. Therefore, a proper understanding of the concept of subject is necessary for an understanding of the process of library classification . A subject is that part of knowledge which may be macro or micro with in the universe of knowledge. According to Plamer and Wells " The specific subject of a book is that division of knowledge which exactly comprehends all the major factors that go in its (thought contents) making."

In Classification the universe of the subjects may be divided into three main types. These types are as follows :

- (i) Simple subjects
- (ii) Compound subjects

(iii) Complex subjects is as follows :

### **1.3.2.1 Simple Subject**

A simple subject is a subject which consists of a basic class only.

#### **Basic Class**

A Basic class is a class which has been listed either in the schedule of Main class or in the schedules of canonical classes. Every main class is, therefore, a basic class and every canonical class is also a basic class.

In the Colon Classification Main classes are listed in Chapter I of Part II and canonical classes are found in the following Main classes:

B	Mathematics
C	Physics
H	Geology
LX	Pharmacognosy
M	Useful Arts
N	Fine Arts
R	Philosophy

#### **Basic Subject**

A basic class is also called basic subject.

#### **Basic Facet**

When a subject is analysed for purpose of its classification the Basic class or Basic subject component of the subject under analysis is called Basic Facet.

An illustrative list of a few basic classes is given below:

Agriculture	(Main Class)
Botany	-do-
Education	-do-
History	-do-
Medicine	-do-
Physics	-do-
Properties of Matter	(Canonical class of Main class Physics)
Radiation	-do-
Trigonometry	(Canonical class of Main class Mathematics)
Ethics	(Canonical class of Main class Philosophy)

### **1.3.2.2 Compound Subject**

The second type of subjects are called compound subjects. A compound subject consists of

- (i) a basic class or basic subject (basic facet) and
- (ii) one or more isolates (isolate facets)

We could represent a compound subject in the following mathematical form

Basic class + isolate (s) = Compound Subject

We already know what basic classes are.

### **1.3.2.2.1 Isolate**

An understanding of the concept of isolate is crucial in understanding the process of classification. We shall briefly attempt to describe this concept. Dr. S.R. Ranganathan defines as isolate as “ an idea which cannot by itself be a subject normally written upon by a person specializing in a single subject field or sought by a single person. On the other hand, if coupled with a Basic Class it yields a subject other than a Basic Class, but forming subdivision of it: that is with a smaller than itself ” ( *A descriptive account of colon classification, p.66*).

The basic difference between a Basic Class and an Isolate is that a basic class is a subject by itself where as an isolate is not a subject. Let us illustrate this fact by a few examples ‘S’ Psychology and ‘T’ Education are basic classes and are, therefore, independent subjects. But ‘child’ may form the subject matter of the subject of Psychology, Education, Sociology, Law, Medicine, etc, as the following titles reveal.

Child psychology

Education of children

Indian Law relating to children

Pediatrics (Child Medicine)

Thus ‘child’ is not a main class or canonical class. It can only become a focus of study of one of the basic classes, it is therefore, called an isolate. Take another example. “Water” is an isolate because it is neither a Main Class nor a Canonical Class. It can become the focus of study in either of the following Basic Subject.

Physics

Chemistry

Geology

Structural Geology

Religion

Metaphysics

History

Economics

Law

Isolate have been listed under Main classes and Canonical Classes of the CC.

### **1.3.2.2.2 Facets**

We shall now introduce a new concept of facets.

In a simple subject there is a basic class only. Such a subject is said to

have only one facet, i.e. the facet.

In a compound subject there is always (i) a basic facet, and (ii) one or more than one isolate facet.

According to Dr. S.R. Ranganathan isolate facets get grouped into five categories. These are called five Fundamental Categories.

### **1.3.2.2.3 Five Fundamental Categories**

Dr. Ranganathan recognized five Fundamental Categories and grouped all the isolates into these Fundamental Categories. The five fundamental categories are as follows:

1. Personality :This category is represented by the symbol P=,
2. Matter :This category is represented by the symbol M=;
3. Energy :This category is represented by the symbol E=:
4. Space :This category is represented by the symbol S=.
5. Time :This category is represented by the symbol T=‘

When classifying a document, a classifier has to recognise and determine (i) Basic class of the subject (ii) Isolate facets occurring in the subject (iii). The fundamental category (categories) to which the isolate facet(s) belong. We shall now describe the five Fundamental Categories.

#### **Fundamental Category : Time (**

Time facet or the Fundamental Category Time is easy to recognise in a subject. A century, year, month, date and time occurring in any subject is manifestation of the Fundamental Category Time. Day, Night, Morning, Afternoon, Winter, Summer, etc. are also manifestations of the Fundamental Category Time.

We give below a few examples of subjects with Time facets.

Education in the twentieth century (20th century)

Rainfall in 1970. (1970)

Economic development in India during 1960-1970.(1960-1970)

Winters sports (Winter)

#### **Fundamental Category : Space (.)**

Like time facet, the space facet is easy to recognise. An area like world, continent, country, state, division, district, city, village, locality, etc. may be manifestation of the Fundamental category Space. Physiographical features like mountains, oceans, etc. may also be manifestations of the Fundamental Category Space. Besides population clusters like cities, towns and villages are also manifestations of the Fundamental Category Space.

A few subjects with Space facets are listed below:

Education in India (India)

Rainfall in Indian Mountains (Indian mountains)

Economic development in India during 1960-1970(India)

Winter Sports in the Soviet Union (Soviet Union)

**Fundamental category : Energy (:)**

Any activity represented in a subject will be manifestation of the Fundamental Category Energy. A few subjects in which Energy Facet occurs are listed below:

Book selection in Indian Libraries.

Generation of electricity

Prospecting of minerals

Analysis sentences

Praying in Buddhist temples

Examination of Students

Foreign Policy of India

Production of coal in Bihar

Child naming ceremony among Sikhs

In the above examples book selection, generation, prospecting, analysis, praying, examination, foreign policy, production and naming ceremony are all energy facets.

**Fundamental Category : Matter (;)**

Material and properties in subjects may be manifestations of the Fundamental Category Matter. In colon classification Ed. 6, Matter isolates are given in the main class 'X' Economics.

**Fundamental Category : Personality (,)**

It is difficult to explain personality isolates to beginners. Experienced classifiers are able to recognise them.

The beginners can, however, identify Personality facets in a subject in the following manner :

1. Identify the Basic class or the Basic facet
2. Identify Time, Space, Energy and Matter facets
3. The remaining isolate or isolates, if any, are likely to be

Personality facets.

Personality isolates are listed under foci in (p) under each Main class or Canonical class.

In each Main class personality facet represents a characteristic of fundamental importance to the main class. For instance in the Main class Psychology 'Entity' is the personality facet. In the Main class Literature and Linguistics, 'Language' is the Personality facet. In Botany natural group of plants is the Personality facet, and so on.

We give below a very brief list of some personality isolates

Printed book in Bibliography  
Plane in Mathematics  
Solid in Mathematics  
Read in Engineering  
Machinery in Engineering  
Judiciary in History and Political Science  
Democracy in Political Science  
Railways in Economics  
Bank in Economics  
Family in Sociology and Law  
Sanskrit in Literature and Linguistics  
Hinduism in Religion and Philosophy

We give below a compound subject and analyse it into its constituent facets: "Management of Women's Education in India in 1970." This subject has the following facets.

Education is basic facet (Main Class)  
Women is an isolate facet manifesting the Fundamental Category Personality.  
Management is an isolate facet manifesting the Fundamental Category Energy.

Indian is an isolate facet manifesting the Fundamental Category Space.  
1970 is an isolate facet manifesting the Fundamental category Time.

### **Levels and Rounds of Fundamental Categories**

#### **Levels**

Sometimes a Fundamental Category may come more than once in a subject, for example India and desert, both of which manifest space, may come in a subject like "Rain fall in Indian desert". In such cases the Fundamental Category is said to have two levels.

#### **Rounds**

Fundamental Category Energy does not have levels  
Fundamental Category may call for rounds of the Fundamental Categories. Personality and Matter. For example in CC (5th edition), Disease in Main class Medicine is treated as fundamental Category Energy of the first round. It is followed by personality facet of the second round, and further followed by Energy facet Handling of the second round. The second round Energy is again followed by Personality facet of the third round. Because Space and Time facets always come in the end, they do not participate in rounds.

### **1.3.2.3 Complex Subjects**

The third type of subjects are called Complex Subjects. In complex subjects there is more than one Basic Class. The basic classes in a complex subject may come with or without isolates.

We give below few examples of complex subjects.

'Mathematics for Biologists.' It is a complex subject because in this subject there are two Main classes, i.e. Mathematics and Biology.

"Medical Jurisprudence" is a complex subject because it is formed by a combination of two Main classes, namely Medicine and Law.

"Geopolitics is another complex subject. In this subject there are two Main classes, i.e. Geography and Political Science.

In summary we may say that in library classification we handle mainly two types of classes.

- (i) Basic classes
- (ii) Isolates

When the subject of a book consists of a Basic Class only we call it a simple subject.

When the subject of a book consists of a Basic class plus one or more isolates, we call it a compound subject.

When the subject of a book consists of more than one Basic Class with without isolates, we call it a complex subject.

Isolates in a compound subject may be grouped into Five Fundamental Categories, which are Personality, Matter, Energy, Space and Time.

These categories and the Basic Class and are called facets.

### **1.3.3 Further Readings :-**

- 1 Krishan Kumar : Theory of Classification, 4th ed. ND; Vikas 2006.
- 2 Ranganathan, S.R. : Prolegomena to Library classification, Ed. 3. Pages 80-89; 399-420
- 3 Ranganathan, S.R. : A Descriptive Account of Colon Classification
- 4 C.K. Sharma and : Library Classification. 2007  
and Amit K. Sharma

**MODELS OF CLASSIFICATION SCHEME:  
ENUMERATIVE AND FACETED : THEIR MERITS AND DEMERITS**

The term classification has a wide connotation. Ordinarily, it means systematic arrangement in groups or categories according to a established criteria. The concept is very commonly practiced in everyday life of human beings. To arrange things in a systematic manner with the purpose of quicker access to a particular thing of use is a common feature. Classification, in fact, is instinctive to human nature as men in all their thinking process in some way or other are organizing their thoughts and actions. Its practical implications in the professional world too have been widely accepted.

In this lesson, an attempt has been made to present the brief description of main models of classification scheme i.e. enumerative and faceted. In fact there are two distinctive stages in the development of general theory of classification. In first stage, the descriptive theory distilled out of the past practices in designing the schemes of classification and their use. In second it was development of dynamic theory for guidance in designing schemes with a greater degree's of details for depth classification. The base of enumerative scheme is the descriptive theory, whereas faceted scheme belongs to dynamic models of classification.

**1.4.0 Objectives :**

After the study of this lesson, you will get an idea of

- (1) Need and importance of the general theory of classification.
- (2) Descriptive theory and dynamic theory.
- (3) Species of schemes of library classification i.e. enumerative and faceted.
- (4) Their merits and demerits.

**Structure of the Lesson**

To achieve the aforesaid objectives the lesson has been textiled as under:

- 1.4.1. Introduction
- 1.4.2. Library Classification
- 1.4.3. Theory of Library Classification
  - 1.4.3.1 Importance of theory
  - 1.4.3.2 Need of theory .
  - 1.4.3.3 Development of theory

- 1.4.4. Descriptive theory of Library Classification
- 1.4.5. Dynamic theory of Library Classification
- 1.4.6. Species of Library Classification
  - 1.4.6.1 Purely enumerative scheme
  - 1.4.6.2 Almost enumerative scheme
  - 1.4.6.3 Almost faceted scheme
  - 1.4.6.4 Fully but rigidly-faceted scheme
  - 1.4.6.5 Almost freely faceted scheme
  - 1.4.6.6 Freely faceted analytico synthetic scheme
- 1.4.7. Evolutionary Trend
- 1.4.8. Comparative Study of Enumerative and Faceted Models of Classification.
- 1.4.9. Conclusion
- 1.4.10. Self Check Exercise
- 1.4.11. Key words
- 1.4.12. References and further reading
- 1.4.13. Answers to the Self Check Exercise

#### **1.4.1. Introduction:**

With the growth of civilization, the human knowledge is turbulently growing. The process of growth was very slow in the beginning, but it has been steadily growing, increasing the complexity of the human living. The present situation is that there is deluge of knowledge and information and one has to deal with the hard problem of selecting the most pertinent and important out of the vast sea of document which are being produced in traditional and in newer media of communication. It is just like searching a needle in a big heap of hay. This process will never stop resulting into explosion of knowledge.

Dr. Ranganathan in his famous creation, *Prolegomena to Library Classification*, observes as under about the nature of entities of knowledge (single unit of our knowledge in the shape of what exists in concrete shape or even as idea) :

- (i) The number of entities known at any moment may be finite,
- (ii) The number of entities unknown at any moment is infinite and
- (iii) Some of entities unknown at any moment will be known from time to time in future.

From above, it may be noticed that due to turbulently dynamic nature of knowledge, it is very difficult to organize knowledge. Therefore, knowledge classification is the base of library classification.

There is a large number of systems of knowledge classification. There are about 161 according to Richardson. Thinkers made a survey of the existing human knowledge. This led to arrangement of divisions into territories of knowledge. They devised various systems on the basis of their organized knowledge in some logical order (schemes).

#### **1.4.2. Library Classification**

According to Sayers, library classification is the “arrangement of books on shelves or description of them, in a manner which is most useful to those who read.”

According to Dr. Ranganathan, “the book classification is a scheme for the classification of macro subjects, usually presenting more than five facets, including the basic facet.

Classification is primarily a mental process/operation, for in arranging things we place them in an order which corresponds with an idea or series of ideas in our mind. We cannot arrange things in an order which did not exist in our thought. The operation of classification has thus always a purpose in view.

#### **1.4.3. Theory of Library Classification**

To understand the schemes of classification it is essential to know about the theory of classification.

##### **1.4.3.1 Importance of Theory:**

A theory refers to an organized set of principles, which provides the basis for further investigations into and the development of a subject. It explains what and why phenomenon. It qualifies the subject to be accepted as a discipline. It provides a scientific basis for a subject and brings respectability and status to it.

##### **1.4.3.2 Need of Theory :**

During the early stages, there was a small number of subjects constituting the whole of knowledge and a broad classification met the requirement of the time. However, with the passage of time, the number of subjects into which knowledge could be divided steadily increased, proving the existing schemes inadequate. With the growing complexity of the subjects enshrined in documents, it became necessary to classify knowledge minutely. This complexity and vastness called for a theory of library classification which could meet the challenges posed by turbulent growth in knowledge.

##### **1.4.3.3 Development of Theory:**

In all sphere of life, practice precedes theory. Life force stimulates man to improvise, design and develop various aids both at physical and mental levels. After a long experience is gained with an improved aid, a theory is developed to understand the aid deeply and to systemise, improve, refine

and develop it. The same happened with classification. After the design of Decimal Classification Richardson and Sayers made comparative studies of the then known schemes of classification and evolved a Theory of Classification. It was largely a **Descriptive Formulation** and **Interpretive Explanation**. It was static and not dynamic.

After 1949, Ranganathan and his associates slowly evolved a **Dynamic Theory of Classification**. The first consolidated account of this theory was published in 1957 in *Prolegomena to Library Classification* by Dr. Ranganathan.

#### **1.4.4. Descriptive Theory of Library Classification**

In the beginning there was no theory. Practice was followed. Practice gave rise to descriptive theory, the first stage being the development of library classification. The descriptive theory was based on the practices in vogue based on different available classification schemes. The descriptive theory, distilled out of the contemporary schemes held its way until the early 1950s. These schemes were based on the flair or normal understanding of the designers and not based on any objectively worked out theory of library classification. The methods were empirical. The several stalwarts of the descriptive theory were like Brown, Richardson, Hulme, Sayers, Bliss and Ranganathan.

#### **1.4.5. Dynamic Theory of Library Classification**

According to R.S. Parkhi, a dynamic theory is, “a theory of library classification capable of carving out a methodology for the design of a scheme for library classification.” It is regarded as second stage in development of the general theory of library classification. Such a theory enables us to organise emerging new subjects and the already known subjects in their proper place in a scheme of classification without disturbing the already established sequences. Its approach is futuristic.

The dynamic theory of library classification, developed by Dr. Ranganathan between 1948 and 1955 was, presented in the *Prolegomena to Library Classification*.

This dynamic theory has provided a sound and stable methodology for designing a scheme of library classification. The formulation of the dynamic theory was marked by the recognition and separation of three planes of work i.e. Idea Plane, Verbal Plane and Notational Plane. The contributors to this theory are Bliss and Dr. Ranganathan.

Today, on the basis of these two theories of library classification, a large number of schemes (Genus) are available. It would be useful to categorise these on the basis of their characteristics into different groups, called species. Species are, therefore, the groups into which the genus may be divided.

The Species means the sum of the qualities common to all the individuals forming part of the species and sufficient to mark them out from

the rest of the genus as well as from other things.

#### **1.4.6. Species of Library Classification :**

The general line of evolution of schemes for classification of subjects has been from *Enumerative* towards *Analytico-Synthetic*, guided by *Postulates* and *Principles*. These species on which the models of classification schemes are based are as under:

- (i) Purely enumerative scheme
- (ii) Almost enumerative scheme
- (iii) Almost faceted scheme
- (iv) Fully but rigidly faceted scheme
- (v) Almost freely faceted scheme
- (vi) Freely faceted scheme

##### **1.4.6.1 Purely Enumerative Scheme**

“An enumerative scheme for classification consists essentially of a single schedule enumerating all subjects-of the past, the present and the anticipatable future.” (*Prolegomena*, p. 95).

###### **1.4.6.1.1 Examples**

*Library of Congress classification and Rider’s international classification* are good examples of the enumerative schemes of classification.

LC runs into 31 volume. The schedules are too long and it is some what difficult for a classifier to prepare a class number, because he will have to handle such a large number of volumes. LC does not provide even common isolates separately, which have been built into the class numbers differently in different subjects. Although LC provides gaps in the notation at a large scale, it has still found it difficult to deal with the onslaught of knowledge.

RIC has been intentionally designed as an enumerative classification. It provides one schedule of enumerated subjects, most of which are compound subjects. Even the schedule of geographical isolates has not been provided separately. The geographical isolates have been included as an integral part of the tables of the scheme.

The schedules are short, enumerating 18,000 subjects. However, the same class number is used for several subjects, causing confusion. There is no provision for newly emerging subjects: Therefore, RIC has hardly any resilience.

###### **1.4.6.1.2 Merits:**

- (1) It is easier to determine the class numbers as notations are listed in the Schedule.
- (2) The addition of each digit is co-extensive of the subject.
- (3) The schemes are often hierarchical in nature indicating sub-

- ordination. Such an arrangement ensures filiatory relationship.
- (4) Interpolation of subjects is comparatively easier in Chain as the enumerative schemes often use the Gap Device to accommodate future subjects.
  - (5) The notations are easy to remember and write.
  - (6) Derivation of subject heading is easier by analyzing each digit in the hierarchical structure.
  - (7) Most of the enumerative schemes have been easily transferred into electronic versions.
  - (8) There cannot be any variation in the class numbers on the same subjects even if assigned by different people because of the enumerative system.

#### **1.4.6.1.3 Demerits:**

- (1) The main disadvantage of the enumerative system is that the knowledge is expanding at a very fast rate and to accommodate new subjects, publication of new editions becomes a necessity which is very time consuming and costly. Even the DDC which is keeping a record of regular publication because of organizational support behind it, takes about an average of ten years for the next edition to appear.
- (2) The hospitality, i.e. the accommodation of new classes, is limited. The Array can, however, be extended at the end. Hospitality in the Chain is also limited because even in the fraction system of notation, introduction of a large number of digits would make the notation unwieldy and defeating the very purpose for which short enumerative notations are appreciated.
- (3) The necessity to retain the integrity inviolate to maintain uniformity of the class numbers in the libraries over a long period of time is not in tune with the times when newer disciplines continue to emerge. But this can also be considered a great virtue of an enumerative classification scheme otherwise there could be problems for the libraries with the publication of every new edition.
- (4) The addition of a new digit to the notation is not necessarily indicative of the co-extensiveness of the subject.
- (5) Enumerative schemes primarily are for broad division of knowledge and though suitable for shelf arrangement. It cannot compete with the schemes providing micro-division of knowledge.

#### **1.4.6.2 Almost-Enumerative Scheme**

“An almost-enumerative scheme for classification consist of a large

schedule enumerating most of the subjects of the past, the present and the anticipatable future and in addition a few schedules of common isolates.” (*Prolegomena*, p. 97).

#### **1.4.6.2.1 Examples**

J.D. Brown’s *Subject classification* and *Dewey Decimal Classification* are examples of almost-enumerative classification. *Subject classification* consists of two schedules-the main schedule and a categorical table. The main schedule lists subjects, most of which are compound subjects. The categorical table contains enumerated isolates. In addition to compound subjects listed in the main schedule, additional compound subjects can be formed by combining the subjects listed in the main schedule with isolates given in the categorical- table. However, the list of isolates provided in the categorical table is too short to be able to overcome the onslaught of subjects.

*Dewey Decimal Classification* (DDC) (18th edition; 1971) provides independent schedules of common time, space and form isolates, as well as a long omnibus schedule of enumerated subjects. Most of the enumerated subjects are compound subjects. There is a limited degree of resilience. Provision of common isolates, which can, be attached to the class number taken from the main tables along with the “Add to.....”device, have enabled DDC18 to withstand, to some extent, the pressure of newly emerging subjects. The same can be said about DDC 19.

#### **1.4.6.2.2 Merits:**

- (1) Such a scheme would enumerate basic subjects and compound subjects.
- (2) As a few schedules of common isolates are provided, it will be possible to construct class numbers of a few more compound subjects.

#### **1.4.6.2.3 Demerits:**

An almost enumerative scheme would have the following disadvantages:

- (1) The schedule of subjects would enumerate basic subjects as well as compound subjects. As a result, the schedule of subjects would be lengthy.
- (2) Although, due to the provision of a few schedules of common isolates, it will be possible to construct class numbers for a few compound subjects, the scheme will not be able to meet the onslaught of knowledge due to a limited provision for the construction of class numbers.
- (3) New subjects which have not been enumerated and also for which the class numbers cannot be constructed by combining enumerated subjects and common isolates, would also prove an additional problem.

Most class numbers would usually consist of a succession of semantically rich digits which may not have been separated into meaningful facets by means of semantically poor digits. Thus, most class numbers would be monolithic.

#### **1.4.6.3 Almost-Faceted Scheme**

“An almost-faceted scheme for classification consists of a large schedule enumerating most of the subjects of the past, the present and the anticipatable future and in addition a few schedules of common isolates and also some schedules of special isolates.” (*Prolegomena*, p. 102).

##### **1.4.6.3.1 Examples**

*Universal Decimal Classification and Bibliographic Classification* are examples of almost-faceted classification.

UDC provides four independent schedules of common isolates, consisting of form, place, time and point of view common auxiliaries. Distinctive indicator digits have been provided for attaching these to main UDC numbers. Language isolates, race and nationality isolates are not common isolates. In addition, schedules of special isolates for use in compound subjects, going with certain enumerated basic and compound subjects, have also been given. However, special isolates are not available in all possible cases. UDC also provides long schedules of enumerated subjects, most of which happen to be compound subjects. The scheme has recommended the use of the colon (:), which allows for the use of some of the enumerated subjects as facets in the formation of compound subjects. In addition, the colon has been employed to form complex subjects.

##### **1.4.6.3.2 Merits:**

- (1) Such a scheme will enumerate basic subjects and also many compound subjects.
- (2) Due to the provision of a few schedules of common isolates and also some schedules of special isolates, it will be possible to construct class numbers of more compound subjects.
- (3) The class numbers formed with the aid of common isolates and/or special isolates will contain indicator digits of a species different from the semantically rich digits used in the schedules enumerating the subjects, as well as those listing common isolates and special isolates.

Thus, the class numbers formed with the aid of common isolates and/or special isolates will be polythetic.

##### **1.4.6.3.3 Demerits:**

As in the almost-faceted scheme for classification, most of the subjects

of the past, present and anticipatable future would be enumerated; therefore, class numbers for different subjects would generally be long.

#### **1.4.6.4 Fully but Rigidly-Faceted Scheme**

“In a rigidly-faceted scheme for classification, the facets and their sequence are pre-determined for all the subjects, going with a basic class.” (*Prolegomena*, p. 107). This means that a facet formula is provided for each basic class. This amounts to predetermining the special isolate facets, which should be used compulsorily in compound subjects going along-with the basic class. This brings in rigidity.

##### **1.4.6.4.1 Examples**

*Colon classification* edition 1 to edition 3 (1st edition, 1933; 2nd edition, 1939 and 3rd edition, 1950) represent examples of rigidly faceted schemes for classification. CC edition 1 to CC edition 3 is referred to as CC Version 1.

##### **1.4.6.4.2 Demerits:**

(1) *Cluttering of indicator digits*: The facet formula provided for each basic class is rigid to the extent that in classifying any compound subject going with a basic class, one must find a place for each one of the facets prescribed by the facet formula for the concerned basic class. The problem does not arise if the compound subject being classified does not present any of the ‘end-facets’ in the formula. However, it is a problem, when any intermediate facet is missing. In such a case it becomes essential to interpolate indicator digits even when the facet or the facets are missing.

In the third edition of CC, the facet formula for engineering is as given below :

D Engineering [Work]; [Secondary work] : [Part]: [Engineering problem]

The class number for “Electrical Engineering” is D66. Here the end-facets are missing and these can be omitted in the class number. The class number for “Design in Electrical Engineering” would be D66 : : :4. Here, three consecutive colons have appeared, which cannot be omitted because the fourth facet is present, though the second and third facets are absent.

We can see that the cluttering of indicator digits gives a clumsy look. The law of parsimony insists that indicator digits should be avoided in such a situation.

(2) *Addition of new facets* : It is to be noted that new compound subjects would bring up additional facets not provided for in the then existing facet formulae for basic subjects. As facet formulae are predetermined and rigid, it would be difficult to interpolate and extrapolate additional facets in these. In the early 25 years of CC, few compound subjects requiring additional facets

appeared, but now such instances are on the increase.

#### **1.4.6.5 Almost-Freely Faceted Scheme**

In a rigidly-faceted scheme of classification, “the facets and their sequence are predetermined for all subjects going with a basic class” (*Prolegomena*, p. 107). This leads to a great deal of rigidity. A scheme becomes almost-freely faceted “because the use of different indicator digits for diverse kinds of facets and the concept of rounds and levels removed the severe rigidity in the number and the sequence of facets that can occur in a compound subject. However, some rigidity lurked in respect of levels of facet within a round.” Therefore, we can see that such a scheme does have some rigidity; because of which it cannot be freely faceted in full measure. As a result, it cannot be referred to as freely faceted classification.

##### **1.4.6.5.1 Examples**

Edition 4 (1952), edition 5 (1957), edition 6 (1960) and edition 7 with annexure (1963) of CC are regarded as *Colon classification* Version 2. These are almost-freely faceted schemes for classification.

#### **1.4.6.6 Freely Faceted Scheme**

As mentioned earlier, a great deal of rigidity occurring in Version 1 of *Colon classification* was removed in the second version. However, some rigidity remained with respect to levels of facets within a round, because of which it was not freely faceted in full measure. With the aid of sector notation, the rigidity with regard to the number of levels of facets and of their sequence in a round (this kind of rigidity existed in the almost-freely faceted scheme) has almost been removed. Besides, some of the facets which were recognized earlier as levels have been designated as sub-facets in. a facet belonging to one and the same level. Another change in concept has been that facets are now considered to belong to compound subjects and not to basic subjects. The basic subject has no facets; it is a basic facet itself. This is an important idea. Therefore, the predetermination of the facets for all the compound subjects are likely to go with any basic subject is out of the question. This is a very logical solution of the problem. Therefore, we can see that rigidity has been removed to a large extent. Any scheme which follows the above approach can be considered a freely faceted scheme for classification.

In freely faceted classification, the same pattern of facet sequence is followed in all subjects. A compound subject has the freedom to use any number of facets as may be found necessary. The sequence of facets is determined with the help of postulates and principles for facet sequence. The sequence obtained follows the absolute syntax of isolate ideas, because it has been found that such a sequence is preferred by a majority of thinkers. The sequence of facets is determined at the idea plane and implemented at the notational plane.

Thus a freely faceted scheme is not subject to a predetermined facet formula for compound subject going with a basic subject. Each compound subject determines its own facets (that is facet ideas, facet terms, facet numbers) and class numbers. It also determines its own facet sequence. This means there is nothing rigid about the number as well as the sequence of facets. Everything is free. Such a scheme is guided by canons, postulates and principles, and can, therefore, claim to be called as freely faceted scheme for classification.

#### **1.4.6.6.1 Example**

The dynamic theory as well as the techniques of library classification have been developed to the extent that the notational system used in CC is quite capable of placing any new main subject, a non-main basic subject (whether simple or compound) in a helpful place in the sequence. The same is true for any new compound subject.

Version 3 of CC is under preparation. A few schedules of CC7 have already appeared. It is likely to incorporate all the findings of the dynamic theory of library classification which is being developed consciously. It is believed that the new version of CC will tend to become a freely faceted, analytico-synthetic scheme for classification. It is hoped that “during the next decade the development in CC will be approximate to the ideal of a freely faceted model of classification.”

#### **1.4.6.6.2 Merits**

It has been found that a freely faceted classification, based on explicitly stated postulates and guiding principles, is the most suitable scheme for adaptation in the design and development of depth schedules for the co-extensive classification of micro-subjects.

The design of the structure of freely faceted classification would sustain for a longer period. However, additional foci would have to be added and some of the existing foci are revised from time to time. At times a new schedule of isolate facets would have to be added for a new compound subject. This is thus a continuing work, which would have to be carried out by a classificationist or classifier-cum-classificationist, guided by explicitly stated laws, canons and principles.

A freely faceted scheme possesses, thus, greater resilience than other species of classification for subjects. Between the two schemes giving a more or less similar structure to the class number for the same specific subject, the freely faceted scheme would be in a position to give a smaller class number.

#### **1.4.6.6.3 Analytico-Synthetic Scheme**

“Analytico-synthetic scheme” is a -generic term used “to denote any

scheme in which a compound subject is first analysed into its facets in the idea plane and later synthesised in the verbal plane and in the notational plane respectively.”<sup>4</sup>

An analytico-synthetic classification scheme involves analysis of a subject into its facets in the idea plane. Transformation takes place in the verbal plane. Translation is done from verbal to the notational plane. Synthesis of the facet numbers into class numbers is carried out in the notational plane. Different editions of *Colon classification* are fully analytico-synthetic schemes. UDC is analytico-synthetic to a small extent. A faceted classification scheme is based on facet analysis. A faceted classification is not analytico-synthetic unless it is a guided one.

The Colon Classification designed by Ranganathan has three distinct versions. Version 1: Editions 1-3 published in 1933, 1939 and 1950; Version 2: Editions 4-6 published in 1952, 1957 and 1960, also the latter edition with the Annexure; and Version 3: Ed. 7 published in 1987 (Reprint 1989). These three versions are representative of the Fully Faceted scheme, Almost Freely Faceted Scheme and Freely Faceted Scheme respectively. Again, in the words of Ranganathan, in a fully faceted scheme, the “facets and their sequence are predetermined for all subjects, going with a basic class”. In this scheme there is a fixed facet formula and the special isolates and no deviation could be made from what has been pre-determined. It is also referred to as Fully but Rigidly-Faceted Scheme. The use of different indicator digits for the facets and introduction of the concept of Rounds and Levels reduced some rigidity in the CC editions 4-6 and, therefore, the second version is known as an Almost-Freely Faceted Scheme. The 7th ed. of CC is a major departure from the earlier editions of the scheme and has been claimed as a freely faceted classification scheme because it is not subject to pre-determined facet formula for the compound subject going with a basic subject. Chapter AF of the 7th edition of the CC defines the concept of the Freely Faceted Scheme for Classification, there is no rigid, pre-determined Facet Formula for the Compound Subjects going with a Basic Subject. The 7th edition has been produced by the Documentation Research and Training Centre (DRTC), Bangalore. Presently, only one volume of the 7th edition has been published and others are yet to come.

The Bibliographic Classification (BC), especially its 2nd edition, is very close to being described as the faceted classification scheme having a large number of integrative features including the most famous Retroactive Notation.

#### **1.4.6.6.4 Merits:**

- (1) In view the faceted character of the schemes, the various components of the subject statement can be analyzed and

represented in the class number.

- (2) The availability of the various facets of a subject makes it an efficient system to retrieve precise and pinpointed information. Faceted schemes, therefore, are considered most suitable for minute classification and are helpful in classifying micro subjects of journal literature.
- (3) In view of the theory-based nature of the schemes, it is possible to deal with the complexities in case of confusion on the part of the classifier.
- (4) Faceted schemes provides more autonomy to classify documents.
- (5) The schemes are capable of forming new numbers by the application of various devices, the sharpening of isolates as described in the CC.
- (6) There is no need to bring out newer editions periodically.
- (7) Faceted schemes are more amenable to hospitality in Chain and Array because of the provision of interpolation and extrapolation devices.
- (8) The schedules are shorter and easy to consult.
- (9) The notation reveals the various components with the help of distinct connecting symbols.
- (10) The individual schedules can be upgraded into depth schedules.

#### **1.4.6.6.5 Demerits**

- (1) The faceted schemes are considered more cumbersome because of the use of mixed notations employing a number of species of digits and other symbols.
- (2) The notation is also not user friendly as it is difficult to remember.
- (3) In view of the use of several indicator digits (connecting symbols), inadvertent errors can creep in when notation is long because of the presence of a number of facets.
- (4) Autonomy available to classifiers in analytico-synthetic schemes can also serve as a disadvantage as all classifiers may not be intellectually sharp to interpret the subjects.
- (5) It has been found that for computerization, the faceted classification schemes are not as amenable as the enumerative schemes because there is need of intelligent analysis and true meaning of the subject in spite of occurrence of synonyms in the natural language.

#### **1.4.7. Evolutionary Trends**

The General Theory of Library Classification and consequently, the evolution of classification systems have always remained in a state of flux. The changes had been both rapid and progressive. The trend has been the movement from enumerative to fully freely faceted schemes of classification

with intervening intermediary stages of almost faceted, rigidly-faceted and almost-freely faceted schemes of classification.

Some historians categorise the schemes of classification as enumerative systems, enumerative systems with a grafted faceted structure (such as UDC, DDC-18-21) and the really faceted systems. Most of the theorists, however, usually divide them into two basic species, i.e. enumerative and faceted. A comparative study of the distinctive features, their advantages and disadvantages is often made.

#### **1.4.8. Comparative Study of Enumerative and Faceted Classification**

<b>Enumerative</b>	<b>Faceted</b>
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#### **1.4.9. Conclusion:**

From the above discussion the history of classification have evolved from the pure enumerative models to the faceted (Freely faceted) models in order one

<p>1. It is more or less a systematic list of basic, compound and a few complex subjects of the past, present and foreseeable future. It means all the class numbers are available readymade.</p>	<p>No class number is available readymade for compound and complex subjects. It is a list of basic subjects and their special isolates and a few schedules of common isolates.</p>
<p>2. It is the first species of classification in the line of evolution. Library of Congress Classification is the best prototype of this species.</p>	<p>It is the latest stage in the evolution of classification systems. Ranganathan's Colon Classification is the best example of this species.</p>
<p>3. It is a classification of the past and is unable to meet the challenges of the present revolution, in information processing and organization. Class numbers are not co-extensive.</p>	<p>It is a classification of the present and of the near future and is fully equipped to meet the challenges of information revolution. Their class numbers are co-extensive.</p>

- |    |   |  |
|----|---|--|
| 4. | Enumerative systems usually do not have any explicit theory and guiding norms. Therefore, they are not able to accommodate new subjects. The structure is rigid and soon becomes outmoded and outdated. | These are based on a explicit theory guided by postulates and principles. By virtue of these guiding principles these are able to accommodate new subjects. These are very resilient, and, thus, enduring and can be easily kept up-to-date. |
| 5. | Notation is simple, class numbers are monolithic.   | Notation is mixed and seems complex at times. Class numbers are polyolithic.   |
| 6. | Schedules are lengthy; system is difficult to design but easy to use.   | Schedules are short, so easy to design, comparatively complex to use;  |
| 7. | Index is indispensable.   | Schedules being slim. The index is less used.  |

to meet the challenges of the turbulently growing universe of subject. Due to explosion of knowledge there is increasing realization that if a scheme of classification has to meet successfully the onslaught of the universe of subjects, it must be based on dynamic theory of classification. Only then it can successfully keep pace with the demands made by newly emerging subjects.

#### **1.4.10. Self Check Exercise**

- Q.1. Name the different species of library classification.
- Q.2. Enlist the different merits and demerits of enumerative classification schemes.

*Note:* Please check your answers with the answers given at the end of the lesson.

#### **1.4.11. Keywords**

**Analytico-Synthetic Classification :** A freely faceted classification based on postulates and principles for analysis and synthesis of the subjects and where there is no rigid, predetermined facet formula for the compound subjects going with a basic subject.

**Common Auxiliaries :** Schedules of supplement facets to be used

- with main schedules for construction of class numbers. A faceted classification has many such schedules.
- Enumeration : The listing of subjects of the past, present and anticipated future.
- Postulate : A postulate is a statement or assumed truth about which we cannot use either of the epithets 'right' or 'wrong'. We can only speak of a set of postulates as 'Helpful' or 'Unhelpful'.
- Universe of Knowledge : Totality of knowledge constructed by human society.

#### 1.4.12. Reference and Further Readings

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#### **1.4.13. Answers to Self-Check Exercise**

- Q. 1.** (i) Purely enumerative scheme  
(ii) Almost enumerative scheme  
(iii) Almost faceted scheme  
(iv) Fully but rigidly faceted scheme  
(v) Almost freely faceted scheme  
(vi) Freely faceted scheme

#### **Q. 2. Merits :**

- (1) It is easier to determine the class numbers and notations are listed in the schedule.
- (2) The addition of each digit is co-extensive of the subject.
- (3) The schemes are often hierarchical in nature indicating subordination. Such an arrangement ensures filiatory relationship.
- (4) Interpolation of subjects is comparatively easier in Chain as the enumerative schemes often use the Gap Device to accommodate future subjects.
- (5) The notations are easy to remember and write.
- (6) Derivation of subject heading is easier by analyzing each digit in the hierarchical structure.
- (7) Most of the enumerative schemes have been easily transferred into electronic versions.
- (8) There cannot be any variation in the class numbers on the same subjects even if assigned by different people because of the enumerative system.

#### **Demerits :**

- (1) The main disadvantage of the enumerative system is that the knowledge is expanding at a very fast rate and to accommodate new subjects, publication of new editions becomes a necessity which is very time consuming and costly. Even the DDC which is keeping a record of regular publication because of organizational support behind it, takes about an average of ten

years for the next edition to appear.

- (2) The hospitality, i.e. the accommodation of new classes, is limited. The array can, however, be extended at the end. Hospitality in the Chain is also limited because even in the fractional system of notation, introduction of a large number of digits would make the notation unwieldy and defeating the very purpose for which short enumerative notations are appreciated.
- (3) The necessity to retain the integrity inviolate to maintain uniformity of the class numbers in the libraries over a long period of time is not in tune with the times when newer disciplines continue to emerge. But this can also be considered a great virtue of an enumerative classification scheme otherwise there could be problems for the libraries with the publication of every new edition.
- (4) The addition of a new digit to the notation is not necessarily indicative of the co-extensiveness of the subject.
- (5) Enumerative schemes primarily are for broad division of knowledge and though suitable for shelf arrangement, cannot compete with the schemes providing micro-division of knowledge.

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**NOTATION: NEED, PURPOSE AND QUALITIES**

**Structure**

**1.5.0 Objectives**

**1.5.1 Introduction**

**1.5.2 Definition**

**1.5.3 Ordinal Number**

**1.5.4 Need**

**1.5.5 Purpose**

**1.5.6 Functions**

**1.5.7 Qualities of Notational System for Classification**

**1.5.8 Digits Used in a Notational System**

**1.5.9 Capacity of Notational System**

**1.5.9.1 Sector Device**

**1.5.9.2 Group Notational System**

**1.5.10 Suggested Readings**

**1.5.0 Objectives:-**

This lesson attempts to introduce you to the basic Concept of Notation and its signification in the library. After study this lesson you would be able to understand Notation, its need, purpose, functions and qualities of a Notational System for classification.

**1.5.1 Introduction :-**

In libraries, books are acquired for use. To facilitate use of the books it is necessary to arrange them in a classified order which may be helpful to most of the users. There is also a need to mechanise the classified arrangement so that the books can be easily arranged on the shelves, as well as kept back after removal of the classified order can be achieved through a notational system.

**1.5.2 Definition:-**

Ranaganathan has defined notation as the “system of ordinal numbers used to represent the classes in a scheme of classification”. According to Palmer and Wells “Notation is a device for mechanising arrangement composed of written symbols whose order is defined. Philips defines it as a series a symbols, which stand for the names of a class convenient for agreement of a classification. Richardson defines it as a short sign. Bliss of course does not agree with Richardson. He supposes that it does not actually translate the term it stands for into another shape. According to sayers “ a book notation is a short hand standing for the name of a term forming a convenient means of reference to the arrangement of our classification.”

The Notational system used for classification of subjects consists of ordinal numbers. Because these numbers exist for arrangement of things or entities: these numbers fix the place of an entity in the linear arrangement of entities. Ordinal numbers are entirely different from ordinary numbers which are used for measuring things.

### **1.5.3 Ordinal Numbers**

The species of digits used for ordinal numbers may not be different from those used for cardinal numbers. They differ only in the functions performed by them. For instance digit 5 can be used both as an ordinal number and as a cardinal number. As a cardinal number 5 may mean 5 kilos of material, 5 paise, 5 meters of cloth, 5 liters of milk, 5 students in a class etc. Here 5 is used as a measure of a thing. As an ordinal number however, 5 will mean that the thing or entity it represents, comes fifth in the arrangement.

Notation, therefore, may be defined as a set of ordinal numbers used to represent the classes in a scheme of classification. Number of notation need not be Indo-Arabic numerals. They can be any sets of digits or symbols, whose place values with respect to one another can be defined. According to Dr. Ranganathan the hospitality, expressiveness, and flexibility should be the basic qualities of notation.

### **1.5.4 Need:**

Universe of knowledge is manifold, multi-dimensional and complex. There is a need to arrange Universe of subjects in a helpful filial sequence. There is also need to mechanise the arrangement. This can be achieved with the help of notational system.

Notation is used in a classification scheme because alphabetical arrangement can not serve the purpose of classification. In an alphabetical arrangement related books get scattered. Moreover, terms used for subjects undergo changes, and synonymous and homonymous terms create any difficulties.

A notational system can mechanise the classified order, as:

- (i) Its language (or symbols) has the capacity to represent many specific subjects; and
- (ii) Symbols in the language admit easy and mechanical arrangement in a pre-determined order.

### **1.5.5 Purpose:**

The main purpose of notation is the mechanisation of preferred order. Alphabetical order of terms may not be treated as a helpful order. A notational symbol helps in arranging documents on the shelves. A book classification cannot function without it. Notation is the basis of practical book classification.

### 1.5.6 Functions:

1. Notation replaces terms used in a scheme of classification, so that whenever a term is to be represented it may be represented by a class mark only. For examples the term “Law” “Economics” and “Library Science” are represented by term ‘Z’, ‘X’ & ‘2’ respectively in colon classification.

2. It shows sequence of schedules and subordination of subjects. That means it not only stands in place of the terms but it also acts as a guide to locate the position of term in the schedules. For example terms like Mathematics, ‘Geometry’, ‘Astronomy’, ‘Physics’, ‘Heat’, ‘Light’ etc., may be represented by one notational symbols used for them in the following order in the Colon classification

B	-	Mathematics
B6	-	Geometry
B9	-	Astronomy
C	-	Physics
C4	-	Heat
C5	-	Light

We may also take as an example of some terms used in Dewey decimal classification. Terms like ‘Political Science’, ‘Economics’ and ‘Law’ have been arranged in the schedules according to notation ‘320’, ‘330’ and ‘340’ respectively.

In similar manner it shows subordination of subject.

3. Notation creates symbiosis between index and schedules. That means consulting the number attached to the index entry one can easily find out the place of the subject in the classification schedules. The relative index of DDC is a good example.

4. Notation helps in arranging books on the shelves in systematic order according to subjects groups, i.e. each main class is followed by its division, sub-divisions etc. Notation helps to maintain this systematic order.

5. Notation increases utility of catalogue for locating books from shelves. Symbols written on the cards are also written on the spine of book. Hence by consulting catalogue cards one can find out the exact location of books on the shelves.

6. Notation helps in maintaining the memory features, divisions, common isolates. Geographical divisions etc. are examples of memory aids.

### 1.5.7 Qualities of a Notational System for Classification

A notational system chosen for a scheme of library classification should have certain qualities. The important qualities are as follows:

#### 1.5.7.1 Brevity

Classification number should be brief. As the spines of books on which the class numbers have to be written are not very wide and the numbers have to be written in one line, it is desirable to keep the number of digits in the class number

limited. But considerations of brevity must not be allowed the over side the requirement of full representation of the subject in the number.

#### **1.5.7.2 Speed of Writing**

Notation should be such as can be easily and speedily written because the class number have to be written at a number of places in the book and on cards and slips.

#### **1.5.7.3 Easy to Speak**

The notational symbols should generally be easy to pronounce.

#### **1.5.7.4 Easy to Scan**

A human eye can scan between 3 to 6 digits at a time. It is therefore, desirable to split the notation into block of 3 digits each so that each block can be scanned separately and easily.

#### **1.5.7.5 Easy to Remember**

A memory of a normal person can pick up and retain between 3 to 6 digits at a time. If the notation is a faceted one or is in blocks of three to six digits it can be easily remembered.

### **1.5.8 Digits used in a Notational System**

The qualities of a notational system are also affected by the types of digits used in it. The following species of digits are generally used in notational system for schemes, of library classification.

1. Indo-Arabic numerals.
2. Capital letter of the Roman-Alphabet.
3. Small letters of the Roman-Alphabet.
4. Punctuation and other marks.
5. Letters of the Greek Alphabet

A scheme of classification which uses only one species of digits is said to have a pure base. Whereas a scheme of classification which uses more than one species of digits is said to have a mixed base. The DDC has with a few minor exceptions, a pure base of Indo-Arabic numerals. The CC, on the other hand, has a mixed base in which all the five species of digits mentioned above are used.

### **1.5.9 Capacity of Notational System**

A notation system for a scheme of classification should not only be able to represent the known or existing subjects but also the new subjects which may come into existence in future because the universe of subjects is a constantly expanding universe.

Another requirement which the notational system should meet is that it should be capable of accommodating the maximum number of classes or isolates in any array. That is to say the capacity of the notation in an array should be very great. The requirement is not easy to meet, because the maximum capacity of notation using Indo-Arabic numerals is ten. It cannot accommodate more than ten classes in an array. Similarly, the capacity of

a notation with a base of Roman Capital letters is 26. If a mixed base of small Roman Letters and Indo-Arabic numerals is used the capacity of the notation in an array will go upto 59 (if i, j and o are ommitted). It may transpire that there may be more than 59 isolates or classes in any array. Such classes or isolates have to be assignewd specific numbers. To provide numbers to classes in an array which exceed the capacity of the notation base, Dr. Ranganathan has evolved two devices. They are:

- (i) Sector Device
- (ii) Group Service

#### 1.5.9.1 Sector Device

Sector Device consists in using one of the digits in a species of digits as an Empty Digit to increase the capacity of the array. An Empty Digit is a digit with an ordinal value but no semantic value. Generally the last digit in a set of digits is used as an Empty Digit. In DDC, 9 and sometime 8 is used as an Empty Digit.

In CC, the digits z, 9 and Z are used as Empty digits. The digit 0 is also used as an Empty Digit in some cases.

Let us see how the use of Empty Digit increases the capacity of an array. Take digits 0-9. These digits can accommodate only ten classes or isolates in an array as demonstrated below.

0

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0      1      2      3      4      5      6      7      8      9

But if the digit 9 is made an Empty Digit and 0 is not used their 16 classes in an array can be accommodated. The classes will be numbered as follows:

1, 2, 3, 4, 5, 6, 7, 8, 91, 92, 93, 94, 95, 96, 97, 98

In these classes, digit 9 has no semantic value but it enables arrangement of the classes in a sequence, i.e. it has ordinal value.

Similarly, if more than 16 classes are required to accomodated in an array then two Empty Digits can be used after 16th class. The classes in that case will be numbered as follow:

1, 2, 3, 4, 5, 6, 7, 8, 91, 92, 93, 94, 95,96, 97, 98, 991, 992, 993, 9994, 995, 996, 997, 998.

In this way upto 24 classes can be accomodated in array.

If more than 24 classes are required to be arranged in an array then either of the following three methods can be employed.

- (i) Another species of digits can be used
- (ii) The base of the notation can be made mixed; and
- (iii) Group Device can be used.

We have shown the use of Sector Device with Indo-Arabic numerals. It can be used with Roman alphabets, it both smalls and capitals, in the same manner.

If the Notational System uses a mixed base of Roman smalls, Indo-Arabic numerals and Roman capitals and employees Sector Device in the three species of digits, the capacity of an array can be increased nearly 19 times i.e. 1113 classes can be accommodated in an array by jettisoning semantic values of meanings of o, z 9 and Z.

The Sector Device consists in depriving some pre-determined digits of their meanings or semantic values and using them to increase capacities of arrays.

### 1.5.9.2 Group Notational System

In the group national system, either two digitated group or three-digitated group is used. In the two-digitated group system with Indo-Arabic numeral base 64 classes can be arranged in an array, whereas with the three-digitated group system 512 numbers in an array can be accommodated. We give below a few examples of group notations.

#### Two-Digitated Group system with Indo-Arabic Numeral Base

11	12	13	14	15	16	17	18
21	22	23	24	25	26	27	28
31	32	33	34	35	36	37	38
41	42	43	44	45	46	47	48
51	52	53	54	55	56	57	58
61	62	63	64	65	66	67	68
71	72	73	74	75	76	77	78
81	82	83	84	85	86	87	88

#### Two Digitated Group System with Roman Capital Base

AA	BB	AC	AD	AE	AF.....AZ
BA	BB	BC	BD	BE	BF.....BZ
CA	CB	CC	CD	CE	CF.....CZ
VA	YB	YC	YD	YE	YF.....YZ

(with this system 529 numbers can be put in an array)

#### Three-Digitated Group System with Indo-Arabic Numeral Base

111	112	118	121	122	128	181	182	188
211	212	218	221	222	228	281	282	288
811	812	818	821	822	828	881	882	888

In the group notation there is no Empty Digit. In two digitated group, each of the digits is semantically rich. Group notation is used in CC in the main Animal Husbandry (KZ). Similarly in the three digitated system, each of the three digit is semantically rich.

### 1.5.10 Suggested Readings :-

1. Krishan Kumar : Theory of Classification
2. Ranganathan (SR) : Colon Classification. Ed6.
3. Mills (J) : A modern outline of Library Classification
4. Ranganathan (SR) : Prolegomena to Library Classification
5. Kaula (PN) : Treatise in Colon Classification
6. Sayers (WCB) : Introduction to Library Classification

### **Major classification Schemes : DDC and CC**

#### **Structure**

##### **1.6.1 Objectives**

- 1.6.1.1 Introduction**
- 1.6.1.2 Dewey Decimal Classification**
- 1.6.1.3 Basic Plan and Application**
- 1.6.1.4 Notation**
- 1.6.1.5 Definition, Scope, Note, Example Note**

##### **1.6.2 Colon Classification**

- 1.6.2.1 Five Fundamental Categories**
- 1.6.2.2 Notation**
- 1.6.2.3 Main Classes**
- 1.6.2.4 Common Isolate**
- 1.6.2.5 Complex Subjects**
- 1.6.2.6 Book Number**
- 1.6.2.7 Suggested Readings**

##### **1.6.1 Objectives :-**

In this lesson you will learn about in Dewey Decimal Classification and Colon Classification Schemes.

##### **1.6.1.1 Introduction :-**

Melvil Dewey, the author of the Dewey Decimal Classification Scheme, was born on December 10, 1851 at Adams Centre, Jefferson, Country, New York. He designed the Decimal Classification Scheme for use in Amherst college in 1873. The Scheme was first published anonymously in 1876 under the title "A Classification and subject index for cataloguing and arranging the Books and Pamphlets of Library". The Scheme proved successful, and was translated into many European and other languages. In 1895 the Decimal Classification was adopted as the basis for Classification Decimal, or now Universal Decimal Classification (UDC).

Melvil Dewey died on December 26, 1931.

##### **1.6.1.2 Dewey Decimal Classification (DDC)**

The Dewey Decimal Classification (DDC) is now in its 23<sup>rd</sup> edition. The 19<sup>th</sup> edition was published in 1979 and consist of three volume. Volume I contains Tables and introduction, Volume 2 contain Schedules, and volume 3 contains Relative Index.

### **1.6.1.3 Basic Plan and Application**

The Dewey Decimal Classification is a hierarchical system using the decimal principle for the subdivision of knowledge as represented in publication that is, each group is the successive division of knowledge, from the broadest to the most minute, divided on the basis ten.”

The first division is into the **ten main classes**, which embraces the whole of human knowledge and intellectual endeavour. These are numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, Main class 0 is used for general work such as general newspapers and encyclopedias and also for certain specialized disciplines that deal with knowledge generally, such as information and communication, library science and journalism. Main classes 1 to 9 consist each of a major discipline or group of related disciplines. Following are the main classes with their assigned meanings: s

- 000 Generalities
- 100 Philosophy and related disciplines
- 200 Religion
- 300 The Social Sciences
- 400 Language
- 500 Pure Sciences
- 600 Technology (Applied Sciences)
- 700 The Arts
- 800 Literature Belles-Letters
- 900 General geography and history and their auxiliaries.

So that the structure may be more readily understood in the following explanation we use one or two digits, although in practice the notation always consist of at least three digits, with zero being used with its normal arithmetical value where required to fill out a number of three digits. Thus the full DDC notation for main class consists of one hundred three-digits number e.g. 000-009 for generalities. 300-399 for social sciences, 900-999 for applied sciences.

**Each main class has ten divisions**, likewise numbered 0-9. Division 0 is used for general work on the main class, 1-9 for subclasses of the main class. Thus 60 is used for general work on the applied sciences, 61 for medical sciences, 62 for engineering and allied operations, 63 for agriculture and

related technologies, etc. The full DDC notation for these divisions, each filled out by the addition of a zero, are 600 for general works in main class 610 for medical sciences, 620 for engineering, 630 for agriculture.

“Again, **each division has ten sections**, also numbered 0-9. The section numbers occupy the third position in the notation. Thus, the full span of section numbers for each division listed above is 600-609, 610-619, 620-629, 630-639. In the sections, the 0 in third position is the number applied to general work on the entire divisions, and 1-9 are used for sub classes. Thus, 630 is assigned to agriculture and related technologies in general, 631 to agriculture techniques and apparatus, 632 to plant injuries, diseases pests, and their control, 633 to productions of field crops, 636 to animal husbandry etc. The system permits further subdivision to any degree desired, with a continued decimal notation, which consists of the addition, following any set of three digits from 000 to 999, of decimal points, and as many as more digits as may be required. Thus 631.53 for plant propagation, 631.51 for harvesting and other topics” (Edition’s introduction, p. xxviii-xxix).

### **Application**

“Each work acquired by the library may be assigned to one of the main classes, division, sections and sub sections to the degree of specificity provided by the schedules of the DDC, and may be identified as belonging to its specified class by use of appropriate notation’s (p. xxi).

The DDC is basically hierarchical in notation and also in disciplinary and subject relationship. In notation hierarchical order is observed by representing each successive division of the discipline or subject by the addition of a digit. To exhibit this hierarchical order, the headings of the subordinate divisions are indented. The depth of the indentation ordinary depends on the length of the number; or degree of subordination to the preceding broader concepts.

### **Centred Entries**

Sometimes it will be found that there is a step in the successive divisions of the discipline or subject for which a unique position in the lengthening digital notation is not available. Such steps are shown in the schedules by spans of numbers; these are called centred entries. For example 386, 387.5 water transportation are central headings.

Central entries represent partial comprehensive classes and contrast with quasi-isolate ideas found in the Colon Classification system, where a number is given to represent a characteristic used for division of a class.

### **Hierarchy in Discipline and Subject**

Hierarchy in disciplinary and subject relationship means that every concept in a notation more specific than that of a main class is subordinate to all the broader concepts of which it is a part and whatever is true of each whole is true of all of its parts. For example, whatever is stated to be true of 600 is likewise true of all its subdivisions, and what is true of 630 is true of all of its subdivisions, and so on.

### **Facet Analysis in DDC**

Two techniques of subject synthesis for building numbers for compound subjects have been adopted in DDC.

- (i) By addition numbers from Auxiliary Tables.
- (ii) By addition numbers from the Schedules.

### **Add from Auxiliary Tables**

7 tables have been provided in DDC of which 2-7 are called Auxiliary Tables.

The auxiliary Tables are as follows :

Table 1	Standard Subdivision
Table 2	Areas
Table 3	Subdivision of individual literature
Table 4	Subdivision of individual Languages
Table 5	Racial, Ethnic, Racial Groups.
Table 6	Languages
Table 7	Persons

Numbers from Auxiliary Tables are added to make the class number more specific or co-extensive with specific subject of the document. The number in the Auxiliary Tables cannot be used as independent class numbers, they are to be added to numbers from the schedule.

Whenever a need for adding numbers from the Auxiliary Tables is likely to arise there will be an instruction indicating exactly what may be added, from which Table and to which base number. It may be that the base number to which numbers from the tables are to be added is not exactly the same as the number appearing in the number column of the heading. The base number is explicitly stated in the instruction of the note.

### **Add from Schedules**

In certain cases numbers from Schedules may have to be added to make the class number more specific or co-extensive with the specific subject of the book. In all such cases classifiers are unstructured as to what sequence of numbers be added from which number to which base number. For example in

591.19. Biophysics and Biochemistry physiology of animals, the note reads “Add to base numbers 591.19 the number following 574.19 in 574. 191-5 74. 192. e.g. radiology 591. 1915”. Three steps in the following order are required to be taken to build this number by synthesis.

- (i) In the sequence biophysics and biochemistry in general 574 191-19” the number for radiobiology is 574-1915.
- (ii) In this number the number following 574.19 is 15
- (iii) The digit 15 is to be added to the base number 591.19, which will give us the number 591.1915.

Sometime one “add” number class number is required to be added to another class number. In all such cases the instruction will read. “Add 00 1.999 to base numbers. Some times full numbers from a part of the schedule may have to be added.

Sometimes one “add’ number may have to be divided by another “add” number. Sometimes numbers may have to be added from schedules as well as tables or from Tables as well as Schedules.

### **Standard Subdivisions**

Having worked out the number to the required degree of specificity, the classifier should add the “standard subdivision” notation in the end, if needed. The following “Standard subdivision” have been provided in the DDC Table 1.

- 01 Philosophy and theory
- 02 Miscellany
- 03 Dictionaries, encyclopedias, concordances.
- 04 General Special
- 05 Serial Publication
- 06 Organizations
- 07 Study and teaching
- 08 Collections
- 09 Historical and geographical treatment.

Classifiers should observe several restrictions on the use of the ‘Standard Subdivision’.

The first is that, unless there are instructions permitting their use, classifiers should be cautious about adding “Standard Subdivisions” to the number chosen for a work that deals with a subject more specifically than the content of the number, i.e. if the subject of the work does not have its own specific number. Secondly, a standard subdivision should not be added if it is redundant. Thirdly, a Standard subdivision should not be added to another unless there are specific instructions to do so.

Fourthly, Standard Subdivision number should not be added to numbers occurring in irregular notation or meaning.

In many places Standard Subdivisions or a span of Standard Subdivisions are named in the schedules. In all such places these can be used.

### **Mnemonics**

The Auxiliary Table provide uniform meaning of numbers in various contexts and there are other provisions for subject synthesis. Subject synthesis impart same meanings to the same concept irrespective of the context in which they may occur. This memory aid is called mnemonic device by Melvil Dewey. The Decimal Scheme observes the Canon of Scheduled Mnemonics and Systematic Mnemonics in its Schedules.

### **Versatility and flexibility**

A valuable feature of the Dewey Decimal classification is the adaptability of its notation to the need of libraries of different size and nature. The DDC can be used specific as well as for broad classification as for close.

#### **1.6.1.4 Notation**

Dewey notation consists solely of Indo-Arabic numerals used decimally. The notation has a hierarchical force, which is represented by indented headings. The notation is pure and simple but not brief.

Hospitality in chain is achieved by the decimal fractional device. Hospitality in array is achieved by limited use of the Sector device i.e. by using digit 9 or 8 for other divisions, and the facet device, i.e. by Synthesising numbers from other schedules or from numbers in the tables.

**Index:** The DDC index in volume III is highly structure but furnishes much assistance to the classifier who understands it. The index contains an entry for every significant term named in the schedules and tables, with leads, sometimes through several successive referrals to every aspect that is named for that is implied by an add note. Class numbers are given for most subjects that have their own numbers in the schedules, and for many subjects whose numbers are obtained through number buildings. The index does not include all the name of persons, cities, organisations, minerals, plants, animals, chemical compounds, drugs manufactured articles, etc.

### **Relativity**

The index is called relative because of its inverse relationship to the schedules. In the schedules different aspects of a subject get scattered according to discipline. In the index they are all brought together under the name of the subject and their location in the schedules indicated.

### **Cross References**

In the index there are many cross references, both direct and generalized. Direct references are of two kinds : those refer to a different term of the same level, and those that refer upto a term on broader level.

Generalized (or Scatter) references are used freely to lead to applications aspects kinds, occurrences etc.

Index entries are arranged alphabetically word by word. Names are generally entered in the plural form.

**How to classify by Dewey** Having determined the specific subject of the document, the classifier can follow either of the following two methods to classify the document.

- (i) Classify from the schedules and check with the index.
- (ii) Classify from the index and check with the schedule.

Beginners should adopt the first method.

The classifiers should note that whether he is a beginner or an expert, he should never class solely from the index. The index provides lead to the schedules but is not exhaustive and can never reproduce the wealth of information available in them (the schedule).

### **Classification from Schedules**

The classifiers should first determine the main class in which the work falls. Then the division section, sub-section and their further sub-division are determined till the classifiers gets the most specific heading which encompasses the subject. At each step on the way the classifier should take carefully the note and directions, making certain that he has to follow a false trail, perhaps.

If he classifies by the index, then he should first locate the entry for the subject, then examine the sub-head under it for the proper aspect. Finding the most specific number he should turn to the appropriate-part of the schedule and analyse the number of the subject.

The important headings, note, etc. which classifier should keep in view while classifying documents are explained below

### **Headings**

Each heading consists of a word or a phrase as inclusive that covers all subordinate topics and entries "The actual wording may be incomplete, because the heading must be read as part of the larger group that includes it, e.g. in 469, "Portuguese" mean portuguese but in 869 the same heading means Portuguese literature."

Two terms separated by "and" and three or more terms separated by commas

are mutually exclusive but coordinate. If two terms in a heading are separated by space, the first term includes the second but is broader than the second.

#### **1.6.1.5 Definition, Scope, Note, Example Note**

Some terms used in the headings are defined and their scopes indicated in the notes following the heading, their headings are followed by notes giving examples which explain the headings.

#### **Inclusion Notes**

Notes after the heading which begin with the terms “including” enumerate subordinate topics, which are not part of those subjects justifying separate placing.

#### **Instruction Notes**

There are many kinds of instruction notes. A list is given below

##### **1. Class Here Notes**

The topics or concepts included there should be assigned the number, such topics or concepts generally overlap the Headings in which they are included. Class here notes may be used to accommodate comprehensive and interdisciplinary works which generally overlaps a Heading.

##### **2. Optional Provisions**

Optional Provisions begin with “if preferred”. In all such cases editors give options to classifiers to class works at more than one place to suit their specific needs. Editor always shows his preference in the choice of the number in all such cases.

##### **3. Use of more than one zero in the “Standard Sub-divisions”.**

At some place is used for purposes other than adding numbers from Standard Table I. In all such cases Classifiers are advised to use two or three zeroes for a Standard Subdivision as the case may be.

##### **4. Synthesis of Notation**

As previously explained synthesis done in the DDC are of three types, namely.

1. Additions from Auxiliary Tables
2. Additions from Schedules.
3. Additions from both Tables and Schedules.

##### **5. General Instructions**

“The classifier should add only to the extent that is appropriate to the sequence that is to be developed”

#### **1. 6.2 Colon Classification**

Padam Shri Dr. S.R. Ranganathan the designer and maker of the Colon Classification scheme, was born at Shivali in Tanjore District on 7<sup>th</sup> August 1902. He was appointed Librarian of the Madras university in 1924 where he

designed, made and tried out the Colon Classification Scheme. The scheme was first published in 1933, sixth edition of the scheme was published in 1960 which was reprinted in 1963 with some amendments.

### **Colon Classification**

Colon Classification is an analytico-synthetic scheme of classification guided by postulates and principle. An analytico scheme of classification guided by Potulates and Principles is called a freely faceted scheme. Colon Classification is, therefore, a freely faceted scheme. It differs from Dewey Decimal Classification scheme which is largely an Enumerative scheme in certain essential respects. In the words of Dr. Ranganathan the Colon Classification differs from the Decimal Classification and the Congress Classification in some fundamental aspects. It is their schedules are, by several times, larger than that of the Colon Classification. Each scheme is called Enumerative Classification. Colon Classification is not an enumerative scheme.

(Colon Classification, P. 12).

In the Colon Classification, ready-made class numbers are not assigned to subject. It is a freely faceted scheme. A Faceted Scheme for Classification consists of Schedules of Basic Classes, Common isolates, and Special Isolates only. In a Faceted Classification, there will be no schedule enumerating compound subject is constructed with the aid of the Basic Subject, the Common Isolates and the Special Isolates enumerated for each subject will have connection of species different from the semantically rich digits used in the schedules for the Basic Class Number and the Isolate Numbers, (Prolegomena, p. 106)

In a Freely Faceted Scheme of classification without any influences or inhibition by the existing schedules for Classification, whatever/facets occur in a Compound subject are all found out by the Facet Analysis of the subject. The appropriate sequence of the facet found out is then determined according to stated postulates and principles. (Prolegomena. P. 109).

In the Colon system the following three types of subject are recognised.

- (i) Simple or Basic subjects.
- (ii) Compounds subjects
- (iii) Complex subjects

Simple or basic subjects can be classified with the help of the schedule of Basic classes provided in the C.C.

Compound and complex subjects have first to be analysed into three constituent facets. Every compound subject consists of (i) a Basic facet or the Basic subject

(ii) one or more isolate facets.

**Facet Formula:** BF (PMEST)

BF means Basic facet or class.

### 1.6.2.1 Five Fundamental Categories

Isolate facets of a subject may manifest any or all of the following five fundamental Categories

Category Name	Abbreviation	Connection symbol
Personality	(P)	Comma (,)
Matter	(M)	Semi colon (;)
Energy	(E)	Colon (:)
Space	(S)	Dot (.)
Time	(T)	Single inverted comma (')

These five Fundamental Categories are arranged in the sequence in a class number.

“The Fundamental Category “Energy” may manifest itself in one and the same subject more than once. The first manifestation is taken to end Round 1 of the manifestation of the three fundamental categories “personality’, “Matter and “Energy”.

The second manifestation is taken to end Round 2 and so on”. Fundamental categories, ‘Personality’ and “Matter” may manifest themselves is Round 1, and Round 2, and so on.

They are said to be Round 1 Personality Facet, Round 2 Personality Facet, and so on.

Rounds of Fundamental Categories are represented by symbols as follows

- (1P) First round personality
- (2P) Second round personality
- (3P) Third round personality
- (3M) Third round matter
- (1E) First round Energy
- (2E) Second round Energy
- (3E) Third round Energy

### Levels

“Any of the Fundamental categories “Personality” and “Matter” may manifest itself more than once in one and the same Round within a subject”. Similarly “Space and Time” Categories may manifest themselves more than once within a subject. Such manifestations are called ‘Levels’ of manifestations of the fundamental categories, and are represented by symbols as follows

- (F) Level of Personality Facet

- (P2) Level 2
- (P3) Level 3
- (S) Level 1 Space Facet
- (S2) Level 2

Thus (2p3) will mean second round Personality of the third level.

### **Amplified Basic Class**

Basic Class may be amplified to meet certain special requirements. In the Colon system two kinds of Amplified Basic Classes are recognised.

#### **Kind 1. System Facet**

“If subject is expounded according to a particular system of thought its Basic class must be fitted with an Amplifying facet of kind 1”. It is called system facet. The focus in the System Facet is got to be Chronological Device, using the date of origin of the System as the epoch.

#### **Kind 2. Special Facet**

“If subject is expounded according to a particular system of thought its Basic class must be fitted with an Amplifying facet kind 1”. It is called System facet. The focus in the System Facet is got to be Chronological Device, using the data on origin of the System as the epoch.

Special schedules of system and special numbers are given in the Colon Classification in the concerned schedule of the Main Classes.

### **Canonical Classes**

Some of the Main Classes have been divided into Canonical Classes. These Main Classes are as follows

- B Mathematics
- C Physics
- H Geography
- IX Pharmacognosy
- M Useful arts
- N Fine arts
- R Philosophy

A main class or a Canonical Class is called a Basic Class.

### **Formation and Sharpening of Isolate**

In the Colon System there is a provision for formation of foci in an array.

The following devices are used for formation and sharpening of foci in an array:

1. Chronological Device (CD)
2. Geographical Device (GD)
3. Subject Device (SD)

4. Alphabetical Device (AD)

5. Super-Imposition Device

Principles for Isolate Sequence

Principles of Later-in-time

“ “ Later-in-Evolution

“ “ Spatial Contiguity

“ “ Quantitative Measure

“ “ Increasing Complexity

“ “ Canonical Sequence

“ “ Literary Warrant

“ “ Alphabetical Sequence Notation

### 1.6.2.2 Notation

CC notation is faceted one i.e. a distinctive symbol provided in the notation to separate a facet in a class number. It has a mixed base consisting of Roman Capitals, Indo-Arabic numerals, Roman Smalls, some Greek alphabets, and some other symbols.

Ordinary values of the digits used in the Colon notation have been laid down as under.

Abcdefghklmnpqrstuvwxyz 1234567890 (Excepted i,j,o)

ABCDEFGHIJKLMNPOQRSTUVWXYZ 1234567890

J.S. Mills writes that “two objectives determined Ranganathan particular concern with notation. The need for detailed specification of the class number should be co-extensive with the thought content of the document. Secondary, the need to master the crucial problem of avoiding rigidity and allowing for growth.

In the Colon notation, subordination to order is observed through out. It is decimal fractional, simple, and brief notation, some devices are used in the notation to provide maximum hospitality in arrays and chains. The following devices are used to provide hospitality in any array:

- (i) Sector Device
- (ii) Gap Device
- (iii) Mixed Base
- (iv) Emptying

To provide Hospitality in chain, the notation has been kept decimal fractional as well as faceted.

To effect economics as well as to demarcate certain important features of the notation from one another zones of notations base have been created.

### Mnemonics

In the CC notation Mnemonics device has been used. The mnemonics used in the notation are of four types :

- (i) Scheduled mnemonics
- (ii) Systematic mnemonics
- (iii) Seminal mnemonics
- (iv) Alphabetical mnemonics

### **Minuteness**

According to J.S. Mills, because of the structure of the Colon Classification Schemes where in fundamental constituent terms given in the schedules can be combined with its basic class to build a number for any possible subject, and immense capacity of its notation to provide. Hospitality in array and chains, and devices for forming foci in any array, minute or close classification of micro-subjects can be done easily. Thus CC meets, better than and other general scheme the two major requirements of classifications : that is to collocate helpfully and to locate unambiguously and precisely.

#### **1.6.2.3 Main Class**

The Main classes of CC are enumerated and the digits representing them are given in chapter I of Part II.

The following are Main Classes

s.	Generalia	Spiritual Experience and Mysticism
1.	University of knowledge	MZA Humanities and Social Sciences
2.	Library Science	
3.	Book Science	MS Humanities
4.	Journalism	Fine Arts
A	Natural Science	NX Literature and Language
AZ	Mathematical Science	O Literature
B	Mathematics	P Linguistics
BZ	Physical Sciences	Q Religion
C	Physics	R Philosophy
D	Engineering	S Psychology
E	Chemistry	SZ Social Science
F	Technology	T Education
G	Biology	U Geography
H	Geology	V History
HX	Mining	W Political Science
I	Botany	X Economics
J	Agriculture	Y Sociology
K	Zoology	YX Social Work

KX	Animal Husbandry	Z	Law
L	Medicine		
LX	Pharmacognosy		
M	Useful Arts		

A separate schedule of isolates going with each of the above Main Classes is given. Schedules contain “Personality” “Matter” and “Energy” isolates. There are separate schedules of scope, Time and Language isolates.

In the schedules of Main Class a facet formula is given in the very beginning. The facet formula is explained in the corresponding chapter of Part I Rules, which also contains detailed instructions about the features and peculiarities of the concerned schedule.

For example the facet formula given in Chapter P Linguistics of the schedule is as follows

P (P), (P2), (P3), (E) (2P)  
the facet formula is explained in Chapter P of Part I as follows

Facet	Term	(In) by
(P)	Language	Enumeration
(P2)	Variant Stage	Enumeration
(P3)	Element	Enumeration
(E) (2P)	Problem	Enumeration

These terms are explained in detail and some other special provisional and features are also pointed out.

### **Abbreviation and Symbols**

The abbreviations used in the CC system are described in chapter 06 “Contractions of the Colon Classification”. Two types of brackets are used with CC abbreviations: Square brackets and circular brackets. Square brackets are used with abbreviation of the Five Fundamental Categories and the conventions is observed throughout the CC system.

#### **1.6.2.4 Common Isolate**

Whereas special isolates are listed in Basic class, with which they normally go, and schedules of time, Space and Language isolates are given in separate chapters, another category of isolates are listed in chapter 2 of the schedules. The isolates are called common isolates .These isolates can be joined to any class number to represent the feature they indicate. Following is the list of common isolates :

- (1) Anteriorising Common isolate (Applicable before Space Facet)
  - a. Bibliography
  - c. Concordance
  - d. Table

- e Formulla  
 f Atlas  
 k Encyclopedia  
 m Periodical  
 n Serial  
 p Conference proceedings  
 v History  
 w Biography  
 x Works  
 y1 Programme of instruction  
 y2 Syllabus  
 y3 Synopsis  
 y4 Scope  
 y7 Case Study  
 y8 Digest
- (2) Anteriorising Common Isolate (Applicable after Time Facet)  
 r Administrative report  
 s Statistics (*if* Periodical)
- (3) Anteriorising Common Isolate (Applicable after Space Facet)  
 s Statistics (if stray) v source material  
 t Commission report v5 Literature  
 t4 Survey v6 Tradition  
 t5 Plan v7 Archaeology etc.  
 t6 Ideal v8 Archive
- (4) Posteriorising Common Isolate : Energy Common Isolate  
 b1 Calculating f3 Experiment  
 b2 Designing f4 Discussion  
 t6 Measuring g Criticism  
 ci Weighing p Drafting  
 f Investigation r Reporting  
 f2 Observation : u Surveying
- (5) Posteriorising Common Isolate; Personality Common Isolates  
 b Profession f2 Observational  
 d Institutions f3 Experimenting  
 e Education f4 Discussional  
 f7 Yogic  
 g Learned Society  
 h Industrial body

k Administrative  
w Department  
Government The Rules in

Chapter 2 explain the facet formulas of the various Common Isolates and offer guidance to classifiers in the use of Common Isolates.

### **1.6.2.5 Complex Subjects**

CC has made provision for Phase Relations which are described below

:-

“A subject is one-phased if it consist of only a single Main Class or any of its sub-classes, i.e. if it is a Basic Class or a Compound Class”.

“A subject is Two Phased if it brings into relations of two Basic Classes or two Compound Classes or a Basic Class or a Compound Class.”

The Class formed by a two-Phase subject is Called a Complex Class. In the CC system five types of relations resulting in five types of complex subjects, are recognized.

They are

1. General Relation
2. Bias Relation
3. Comparison Relation
4. Difference Relation
5. Influence Relation

#### **Intra Facet Relation**

“It is possible to have books expounding the relation between two isolates in one and the same facet of a class”. It is called intra-facet relation, and the isolate thus formed is called a complex isolate.

#### **Intra-Array relation**

Like Intra facet relation, between two isolate in the same array is also possible. There are five types of Intra Facet and Intra Array relations corresponding to the five types of phase relation above.

#### **Classics**

The documents which are considered Classics are treated as separate subjects in the CC system and given a unique classification number. The common isolate digit x is used for this purpose. The Rules for formation of class number of Classics are given in Chapter 7 of the Colon Classification. A Schedule of important Indian classics and sacred books is given in Part III of the colon Classification.

### **1.6.2.6 Book Number**

Colon Classification is the only Scheme which analyses a Book Number

systematically.

The CC system has provided a separate scheme for construction of Book Numbers, in which the year of publication is used as the main feature for individualisation of books in the same ultimate subject. The CC facet formula for

**Book Number is as follow :**

(L) (F) (Y) (A) (V)—(S) ; (C) : (Cr)

L is language enumerated in chapter 5 of the Schedule.

F is form enumerated in chapter 02 of the Schedule.

Y is year number. A special schedule of year number is given in chapter 03 of Part I

A is Accession part of the Book Number (to be used if necessary)

V is Volume Number

S is Supplement Number

C is Copy Number

Cr Criticism Number

**Collection Number**

In the CC system a scheme for Collection Number has also been provided which is explained in Chapter 04, Part I.

**Index**

In the CC a number of index has been provided.

An Index to Part I Rules is provided in the end of Part I.

In part II a Space Index, Botany Index to Natural Groups and Zoology Index to natural Groups have been provided immediately after the respective Schedules. An index to schedules have been provided in the end of Part II with instructions as to how the index is to be used. We reproduce below an interpretation of one index entry given in the Colon Classification.

**Entry in the Index**

Abnormal S, T (P), 6.X (E), 9P Z (P2), 16

**Interpretation of the Entry**

“Abnormal” has the Isolated number 6 in the Personality Facets of S, T Psychology and Education. It has also Isolate Number 9P in the Energy facet of economics, and 16 is the Second level Personality Facet of Z laws’.

A separate index has been provided for the Classes whose class numbers are given in Part III. This index is at the end of Part III.

**1.6.3.6 Suggested Readings :**

1. Dewey : Decimal Classification. Vol. 1 Introduction

2. Krishan Kumar : Theory of classification. Chapter 25
3. Ranganathan (SR) : Colon Classification, Ed. 6 Reprint 1963.
4. Mills (J) : A Modern Outline of Library classification, Chapter II.
5. Ranganathan (SR) : Prolegomena to Library Classification, Chapters  
CC and C.
6. Satija (MP) : A Manual of Practical colon classification Edu. 2002.

**CLASSIFICATION THEORY: CANONS / PRINCIPLES OF  
SAYERS, BLISS AND RANGANATHAN**

A theory refers to an organized set of principles, which provides the basis for further investigations into the development of a subject. It explains the what and why of the existing phenomena. It provides scientific basis for a subject and brings respectability and status to it. Theories are responsible for the growth and developments of a subject.

Canons/Principles of Classification theory propounded by Stalwarts of library science namely Sayers, Bliss and Ranganathan are the core of discussion of this unit.

**1.7.0 Objectives:**

After pondering upon the discussion, you will be able to understand:

- (1) Role of Classification Canons by Sayers;
- (2) Importance of Bliss's Principles of Classification; and
- (3) Value of Ranganathan's Canons in the structure of Dynamic theory of classification.

**Structure:**

To attain aforesaid objectives, the lesson has been textiled as under:

1.7.1. Introduction

1.7.2. Canons of Classification

1.7.2.1 Aims of Canons

1.7.2.2 Genesis of Canons

1.7.2.3 Sayer's Canons

1. 7.2.3.1 Canon of definition

1.7.2.3.2 Canon of division

1. 7.2.3.3 Canon of Terms

1. 7.2.3.4 Canon of Book Classification

1. 7.2.3.5 Canon of Notation

1.7.2.3.6 Canon of Book Classification Scheme

1.7.2.3.7 Conclusion

1.7.2.4 Bliss's Principles of Classification

1.7.2.4.1 Consensus

1. 7.2.4.2 Subordination

- 1. 7.2.4.3 Collocation
- 1.7.2.4.4 Alternative location
- 1. 7.2.4.5 Notation
- 1. 7.2.4.6 Conclusion
- 1.7.2.5 Ranganathan's' Canon
  - 1. 7.2.5.1 Canons for Idea Plane
  - 1.7.2.5.2 Canons for Verbal Plane
  - 1.7.2.5.3 Canon for Notational Plane
- 1.7.3. Conclusion
- 1.7.4. Questions for Self Check Exercise
- 1.7.5. References and Further readings
- 1.7.6. Answers for Self Check Exercise

### **1.7.1. Introduction**

Classification is primarily a mental process, for in arranging things in an order which corresponds with an idea or series of ideas in our minds. We cannot arrange things in an order which did not exist in our thought. Therefore, classification is a mental grouping of facts or phenomenon according to their resemblances and differences, so as to serve some purpose.

Classification pervades all the various activities of our life consciously or unconsciously. Without classification human, progress would be impossible. In ordinary classification, we deal with the arrangement of ideas and objects in a systematic order. In library classification we are concerned with documents and the aim is to arrange them in the most helpful and permanent order. According to Sayers it is "the arrangement of books on shelves or description of them in the manner which is most useful to them who read.

A theory refers to an *organized set of principles*, which provides the basis for further investigation into and the development of the subject. It explains existing phenomena. A theory provides the process of development from time to time and is constantly changing and improving. This is equally true with the development of the theory of library classification.

There are two distinct stages in development of general theory of library classification. In the first stage, descriptive theory was distilled out of past practices in designing schemes of library classification and their use. In second sate, we find the development of a dynamic theory for guidance in designing scheme with a greater degree of details. These are consistent with the normative principles of library science. Thus guiding principles/cannons are available for the designing and practice of library classification. New guiding principles have reduced the elements of flair in the work of classificationist as well as a classifier and made their work more systematic. Work is still going on to improve the guiding principles. Therefore, the present day

theory of library classification is truly dynamic because it is being constantly improved so as to meet the existing demands made by the growing universe of subjects. The contributions of Sayers, Bliss and Ranganathan provide constant directions in this direction.

### **1.7.2. Canons of Classification**

The main core of classification is the capacity of a scheme to classify the specific subjects embodied in documents. The concept in classification confirms to an idea, unit of thought, a subject or a quasi subject. The nature of classification for our discussion is the classification of isolate of ideas which lead to the classification of subjects. Five species of classification of subject have been recognized as under:

- (1) Enumerative Classification
- (2) Almost Enumerative Classification
- (3) Almost Faceted Classification
- (4) Rigidly Faceted Classification
- (5) Analytico-Synthetic Classification

Among them, an Analytico-Synthetic Classification has no rigid, predetermined facets. It only prescribes the sequence of isolates and faceted according to Postulates, Principles and Canons. A faceted classification is not analytico-synthetic unless it is freely faceted and is guided by Postulates, Principles and Canons.

#### **Canons**

Canons are generalized principles forming the basis of General Theory of Classification.

#### **1.7.2.1 Aims of Canons**

The canons are aimed at :

- (i) Designing the schedules of classification schemes;
- (ii) Examination of isolates in the existing schedules;
- (iii) Further expansion of the schedules and providing new classes and their numbers without disturbing the existing arrangement;
- (iv) Scientific study of classification; and
- (v) Serving as a touchstone to assess the efficiency of a scheme of classification.

#### **1.7.2.2 Genesis of the Canons**

W.C.B. Sayers used the term 'Canon' in his study of classification. Earlier to the use of this term E.C. Richardson had formulated this concept by using the term 'Criteria' in his *Classification* (Ed 2, 1912). L. Stanly Jast had formulated 'Fundamental Logic Rules' in this *Library Classification and Shelf Arrangement*. Sayers studies them and termed them Canons. He marshaled and explained the canons to show which of the schemes of classification had relative merits. He examined and tested the

classification schemes through canons and published them under the title *Canons of Classification* (1915). Earlier he had published a *Grammar of Classification* (1912). Bliss enunciated 'Principles' instead of Canons. Dr. Ranganathan elaborated the Canons of Sayers and also enunciated his own Canon. He distinguished them from Postulates and Principles.

### 1.7.2.3. Sayer's Canons

William Charles Berwick Sayers, an English Librarian and teacher of Dr. Ranganathan made a remarkable contribution to the development of the theory of classification. He is referred to as the first grammarian of library classification. He is responsible for interpreting and systematizing the ideas of other theoreticians. He never designed any classification scheme, though, through his theory he has shown the way for others in the designing of classification schemes.

Sayers simplified his theory of classification by stating 29 principles. He called them canons, meaning rules, regulations, standard, tests or criteria of classification. The 29 canons can be grouped under six broad categories as under:

(1)	Canon of definitions	6
(2)	Canon of divisions	7
(3)	Canon of terms	4
(4)	Canon of book classification	4
(5)	Canon of notation	5
(6)	Canon of book classification schemes	3

#### 1.7.2.3.1 Canon of Definition

Classification is a mental process by which things or ideas are grouped according to their likeness. The likeness which exists in the universe of things and ideas is called **characteristics** in classification. A **characteristics** is a basis of division or grouping of classes. In scheme of classification, classes are to be arranged in a systematic order. The order is based on theory of knowledge. These six are (i) definitions of classification, (ii) subjects of classification, (iii) general classification, (iv) class (v) scheme of classification (vi) the order.

**Comments** : Ranganathan does not refer to definitions by name of canons, unlike Sayers.

#### 1.7.2.3.2 Canon of Divisions

Assembling things according to their degree of likeness and separating them according to their degree of unlikeness is the process of **division**. The chosen likeness or characteristics used to divide the given things may be natural (inherent) or artificial (temporary). The division should proceed from greater extension and smaller intension to smaller extension and greater intension. The process of division should be gradual, moving from general to specific. The characteristics used must be consistent at each stage of division, one principle of division being exhausted before

another is introduced.

Therefore, the dividing process must be gradual.

**Comments:** Ranganathan uses the word 'characteristics' and the above canons are referred to as canons for characteristics. The above canons have been called the canons of filiatory sequence and the canons of consistency.

#### **1.7.2.3.3 Canon of Terms**

A scheme of classification is a statement of knowledge using verbal terms. A term is the name for a class. It may be word or a phrase. The terms should be unambiguous and unique with the same meaning whenever and wherever they are used in a scheme of classification. In a scheme of classification, the terms used should always be non-critical. They may be technical or popular.

**Comments:** Ranganathan refers to the above canons as canons for terminology. The first canon has been named the canon of context.

#### **1.7.2.3.4 Canon of Book Classification**

Book classification must be general, inclusive of all matters that are have been or may be matter of books. A book classification is a device for the arrangement of books by subject or form in logical order. It must be capable of admitting any new subject without dislocating the classes of subjects already drawn. Book Classification must be equipped with

- (i) **A generalia class** to accommodate books too general for inclusion in any single class e.g. general encyclopedia and journals.
- (ii) **For classes like poetry, fiction, drama etc.:** Where the general characteristic of the scheme is arrangement by subject, must have form classes for the arrangement of books which are most usefully placed under the forms in which they are written.
- (iii) **Forms in which subjects are presented like theory, history, dictionary etc. :** Systematic schedules for the discrimination of the forms in which subjects are presented e.g. Theory of ..... History of..... Or Bibliography of .....etc.
- (iv) **A notation:** A notation which shall provide a symbol for every class-term (or group of class-terms where a heading consists of several terms).  
**Comments:** The first section says that book classification should be 'inclusive of all matters'. Obviously, it will provide for generalia class, form classes, subject classes and so on. However, later sections provide the specific details which should be included under 'all matters.'
- (v) **An index**  
**Comments :** An index adds to the usefulness of classification scheme. It should not be made a canon. It must be uncritical in its terms for

subjects and in classing a book.

#### **1.7.2.3.5 Canon of Notation**

The notation may consist of any symbol or sign that are capable of making all the parts of scheme. It should, however be (a) brief, (b) simple, (c) flexible, and (d) mnemonic.

**Comments :** Quality (a) can be represented by the cannon of relativity, (b) refers to simple notation, but Sayer's preference seems to be for a mixed notation. However, the mixed notation cannot be as simple as a pure notation, and (c) quality means adjustability and expansibility. If the notation is flexible, the scheme of classification will be in a better position to satisfy the canons of the growing universe at the notational plane.

#### **1.7.2.3.6 Canon of Book Classification Scheme**

A scheme of classification should provide columnar schedules in the order of precedence of subjects. It is necessary to explain how to use the scheme, with tables showing outlines of main classes and the main divisions so that the order and compass of scheme are seen easily and table of systematic schedules.

**Comments :** The above mentioned canons are mere directions to a classificationist. Therefore, these cannot be regarded as canons.

A classification scheme needs continuous study and revision, so that it is maintained in currency with knowledge.

**Comments :** Revision to maintain currency with knowledge will satisfy the canon of currency.

#### **1.7.2.3.7 Conclusion**

From the above, it is concluded that some of ideas have wrongly been referred as canons. Each canons should have been given a specific name, as was done by Dr. Ranganathan. The set of canons developed by Sayers is based mainly on the precepts of classification enunciated by various other authors. However, Sayers should be given credit for synthesizing the canon into a theory of classification.

#### **1.7.2.4 Bliss's Principles of Classification**

Henry Evelyn Bliss is the author of Bibliographic Classification which was first conceived in 1908. An outline of the scheme was published in *Library Journal* in 1910.

Bliss did recognize the need for certain forms of synthesis (composite specification) but he was opposed to the idea of complete analysis and synthesis as proposed by Ranganathan.

In addition to the articles, which he contributed in library journals, his theories and principles of classification were expanded in his first work, titled *Organization of Knowledge and the System of Science*, 1929. In this work he formulated scientific,

philosophical and logical grounds for the study of Bibliographic Classification.

### **Principles**

Bibliographic Classification is based on theoretical principles. These principles have been explained by Bliss in his *Organization of Knowledge* and have also been described in the introduction to the scheme. These principles are:

#### **1.7.2.4.1 Consensus**

Bliss viewed book classification as basically knowledge classification. He felt that considerable agreement existed among the experts on the arrangement of various branches of human knowledge. He termed these as **scientific and educational consensus**. The growth, organisation and development of human knowledge are brought about through the process of science and education.

The word **consensus** refers to a relative agreement on the major classes of knowledge, their scope, order of arrangement and the essential relation between them. He believed that the natural order or main classes was close to this consensual order. Bliss felt that more closely a library classification reflected this consensus, the more stable, durable, flexible and efficient it would be. His order of main classes is based on this consensus.

#### **1.7.2.4.2 Subordination**

Bliss theorized that a classification scheme should observe two types of subordination, viz.,

- (i) Subordination of the special to the general, and
- (ii) Gradation by specialty

**(i) Subordination of the special to the general:** This is also referred to as the **principle of decreasing extension**. A scheme of classification should arrange subjects in the order of decreasing extension so that a general subject is followed by a special subject. The order of subjects in a scheme of classification should reflect the sequence from general to specific.

**(ii) Gradation by specialty:** This concept is based on the philosophical notion of gradation by specialty. Gradation principle is employed for organising a series of topics of equal rank into a rational sequence. The principle is that some subjects depend for their very existence on the work or findings of others, and those that so dependent should follow the disciplines upon which they rely. This is also known as the **principle of dependency**. For example, among the natural science, physics comes first because it deals with the fundamentals of natural phenomena. Chemical phenomena depend to some extent on the findings of the physicists and, therefore, chemistry follows physics. Bliss claims that “gradation by specialty is no mere arbitrary basis for classification but is a principle essential to the very process.” Thus, the order of classes will be :

General treated generally;

General treated specially;  
Special treated generally;  
Special treated specially.

#### 1.7.2.4.3 Collocation

It is a by product of the above two principles. By collocation, Bliss means “bringing together in proximity subjects which are most closely related”. Ranganathan termed this as **filiatory sequence**. The principles of subordination and gradation by specialty help to decide the sequence of broad subject fields or disciplines and within each subject, the principle of decreasing extension and various orders in any array determine the sequence of the subject. It is also necessary for bringing together similar subjects, which are most closely related.

Therefore, Bliss in his **Bibliographic Classification**, collocated **language** with **literature**, because of their very close affinity with each other. Similarly, **education** is collocated with **psychology**, and **chemical technology** with **chemistry**. Collocation generally refers to coordinate classes. But, it may also refer to subordinate classes. Bliss subordinated **sociology to anthropology and anthropology to biology**.

#### 1.7.2.4.4 Alternative Locations

A scheme of classification should meet the different needs and requirements of a special collection. Therefore, libraries may wish to alter the order established by logical sequence. A scheme, if it is to be of maximum usefulness, should therefore provide for the adaptation of logical sequence to practical convenience in order to meet different views. Bliss did not believe in the rigid and inadaptable view of the order of knowledge. To meet this principle or practical convenience, provision has been made deliberately for alternative locations and treatments in his unique scheme, though it is somewhat contrary to the principle of consensus.

Provision has been made in notation for moving certain topics to other locations. For example, moving **theology** from the main class P **religion** to class AJ following **philosophy**; technologies like **aeronautics** or **ship building** from **applied physics** to **useful arts** and subordinating **international law** to **political science** or to **law**; and **economic history** to **general history**.

This principle provides flexibility needed to solve certain problems in classification faced by all classifiers of all system. But it also proves that there is no absolute consensus on the order of subjects.

#### 1.7.2.4.5 Notation

Bliss recognised three important qualities of a good notation.

These are :

- \* It should be correlative and subsidiary
- \* It should be simple and brief, i.e., a notation should remain reasonably simple. He even suggested an economic limit of three to four digits in

a class number.

- \* It should use synthetic features. This is to achieve economy in the printing and display of schedules resulting in the simplicity of structure and convenience in use.

Bliss achieved this by the provision of general and special systematic schedules for construction of coextensive class numbers.

#### **1.7.2.4.6 Conclusion**

The great works of Bliss ie. “*Organization of Knowledge and system of Science*” (1929), “*Organization of Knowledge in Libraries and the Subject Approach to Books*” (1933) and “*System of Bibliographic Classification*”, (1935), provide a comprehensive treatise on classification. He stated his principles of classification in various forms in his writings and succeeded in providing a comprehensive theory of library classification is truly remarkable and will always guide in the field of classification.

#### **1.7.2.5 Ranganathan’s Canons**

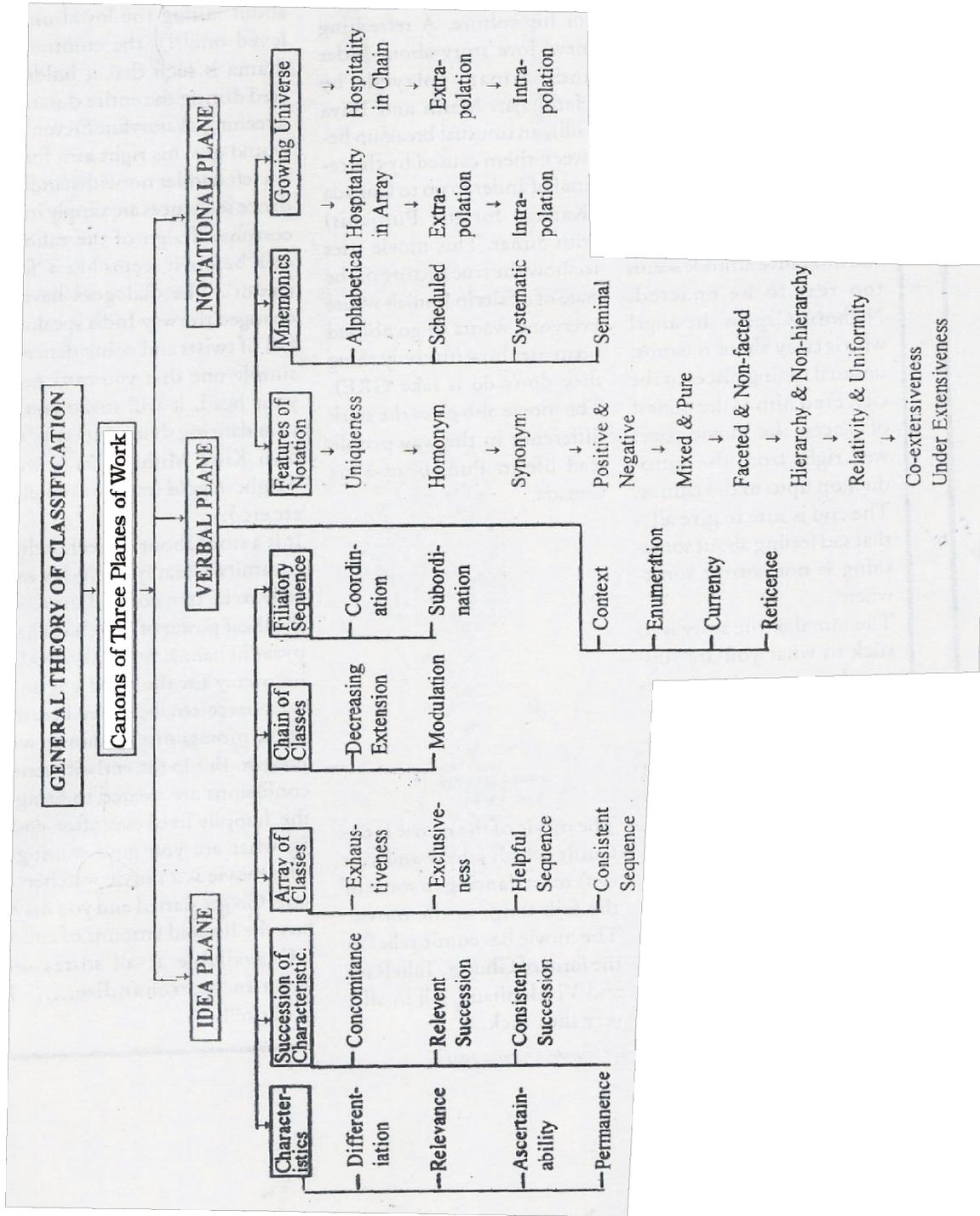
Ranganathan gave specific names to Canons and explained their significance, application and value to the study of the Theory of Classification. The first edition of *Prolegomena* (1937) contained 28 Canons. The second edition (1957) contained 33 Canons. These were grouped as under:

- (a) General Theory of Classification : 22 Canons
- (b) Special Theory of Classification : 6 Canons
- (c) Special Theory of Book Classification : 5 Canons

Edition 3 of *Prolegomena* contained 39 Canons. These are grouped under three Planes of Work:

- (a) Canons for Idea Plane : 15 Canons
- (b) Canons for Verbal Plane : 4 Canons
- (c) Canons for Notational Plane : 20 Canons

All of these canons are shown diagrammatical in the figure given below:



These canons are in total conformity with the Basic Law and Five Laws of Library Science. These canons are helpful in designing a scheme of classification.

#### **1.7.2.5.1 Canons for Idea Plane**

The work of the colon classification in the Idea plane is guided by 15 canons. These fall into four sets. Seven of the canons concern the characteristics chosen for classification; four regulate the formation of arrays in isolates and of classes; two belong to the domain of chairs of classes; and the two last prescribe the character of a filiation sequence of isolates and classes. These are as follows:

##### **1.7.2.5.1.1 Canons for Characteristics**

Dr. Ranganathan included following canons in the first canon of idea plane.

###### **1.7.2.5.1.1.1 Canon of Differentiation**

According to this canon, "Each characteristic used should differentiate, i.e. it should give rise to at least two classes or isolates as the case may be."

In the universe of 'students' the characteristic 'percentage of marks', helps us to differentiate between them, but the characteristic 'possession of head' or 'hands' etc., cannot differentiate 'students'. Although, the library classification helps in bringing together related material, yet it has to separate related material based on certain characteristics, at the same time. For example, 'Indian History in 18<sup>th</sup> Century' and 'Indian History in 19<sup>th</sup> Century', both the related, as from the same main class 'History' but having different 'period' characteristics.

###### **1.7.2.5.1.1.2 Canon of Relevance**

"A characteristic used as the basis for classification of a universe should be relevant to the purpose of the classification." That means, each characteristic should be relevant to the purpose of classification.

This classification of one and the same universe of entities may have to be done on the basis of different characteristics depending upon the purpose for which the classification is made; i.e. on the subject context. For example, to classify the 'books', the most relevant characteristics is its thought content, since purpose of classification is subject arrangement. So other characteristics such as, size, format and number of pages are irrelevant.

The number of relevant characteristics can be many. So one would be required to choose which are most purposeful, helpful and relevant. This is what canon demands.

###### **1.7.2.5.1.1.3 Canon of Ascertainability**

"A characteristics used as the basis for classification of a universe should be definite and ascertainable." For example, in the universe of 'poets' or 'authors' in literature, if the year of birth is ascertainable, it may be used to serve as the basis of classification. On the other hand, if the date of death is chosen as the characteristic

to divide a group of living people, then it is not possible to ascertain the definite dates of death. So, the above canon insists that we should use proper, definite and ascertainable characteristics.

#### **1.7.2.5.1.1.4 Canon of Permanence**

“Each characteristic should continue to be both ascertainable and unchanged, so long as there is no change in the purpose of the classification.” In view of this canon, one must select only those characteristic in division which are stable or permanent in nature. For example, a scheme for classification divides periodicals into classes, based on the characteristics, such as those published by learned societies and others. But periodicals undergo frequent changes regarding the body publishing them. As a result, the kind of division mentioned above is not going to be permanent one, as periodical changes groups frequently (publishing agency). So, Dr. Ranganathan has selected a stable characteristic to divide the universe of periodicals, i.e. the date of inception or the year of release of first volume of that periodical. For example, Indian Journal of Sociology, 1998 (First issue of 1<sup>st</sup> volume was published in 1983). The year 1983 is the epoch or origin to be got by Chronological Device (CD).

As these are common sense canons, each characteristic in an associated scheme of characteristic used in library classification schemes should follow these canons. They are applicable to universe of entities, universe of basic subjects, universe of isolate ideas, universe of compound isolates and universe of complex subjects.

#### **1.7.2.5.1.2 Canons for Succession of Characteristics**

There are three canons for succession of characteristic, which the process of division of knowledge deal with the application of more than one characteristic and the sequence in which these characteristic are to be applied. These three canons are:

##### **1.7.2.5.1.2.1 Canon of Concomitance**

According to this Canon, “No two characteristics should be concomitant, i.e. they should not give rise to the same array of subjects or of isolate ideas.” For example in classifying the universe of ‘men’, we may use height and physical strength as characteristics in succession, but age and the year of birth should not be used in succession because both will lead to the same array. Therefore, two characteristics to be used in succession must give rise to two different sets of arrays.

##### **1.7.2.5.1.2.2 Canon of Relevant Successions**

“The succession of characteristics in the associated scheme of characteristics should be relevant to the purpose of classification.” For example, the four characteristics are used in succession in basic class literature i.e. language, form, author and work, which is the most relevant for the purpose of classifying books in

literature, because it provide most helpful sequence on the shelf.

#### **1.7.2.5.1.2.3 Canon of Consistent Succession**

“The succession of the characteristics in the associated scheme of characteristics should be consistently adhered to, so long as there is no change in the purpose of classification.” Normally, the successions of characteristics decide once should be followed consistently, or things would get too chaotic. However if the purpose of classification has changed, the succession of characteristics should also be changed to suit new requirements. For example, in DDC, ‘history’ has two characteristics viz. Geographical and period in successions, while same class in CC has four characteristics viz. community, organ or part of state, attribute or organ and period. The cannon of consistent demands, the users of both the scheme should adhere their decisions consistently. This is to say that, whatever scheme of classification is adopted the succession of characteristic should be consistent.

#### **1.7.2.5.1.3 Canons for Array**

According to Ranganathan each array of classes or coordinate classes in a scheme for classification should be collectively exhaustive and mutually exclusive, and sequence among them should be helpful and consistent. The canons for array are as follows :

##### **1.7.2.5.1.3.1 Canon of Exhaustiveness**

According to this canon, “the classes in an array of classes, and the ranked isolates in an array of classes, and the ranked isolates in an array of ranked isolates should be totally exhaustive of their respective common immediate universes.” In other worlds, we must say that, it is necessary to exhaust one characteristic before the introduction of another. In an array, colon classification has made a provision for enumerating any number of classes, so that the immediate universe is totally exhausted. Whenever new classes arises, colon classification allows for their interpolation or extrapolation in the proper places through various national techniques. For example, in many subjects, classes are enumerated from 1 to 8, and digit 9 is left for other classes i.e. for the residual class added at the end of the array, so as to make it totally exhaustive. However class do not get individualized under it. This approach was adopted by Ranganathan due to the rigidity of the notational plane, because of the availability of only a limited number of places to accommodate the classes in a given array. This device has been inherited historically. Normally colon classification avoids its use. Instead of this, subject device is used to individualise the classes and make the array totally exhaustive.

##### **1.7.2.5.1.3.2. Canon of Exclusiveness**

“The classes in an array of classes and the isolates in an array of isolates, as the case may be, should be mutually exclusive.” In other words, no two classes of the array can overlap or have an entity in common. This is possible only when the classes

of an array are derived from its immediate universe on the basis of one and only one characteristics.

#### **1.7.2.5.1.3.3 Canon of Helpful Sequence**

“The sequence of classes in an array of classes, and of the ranked isolates in an array of ranked isolates, should be helpful to the purpose of those for whom it is intended.” This canon should be followed in each array as well as any coalesced array. A coalesced array has been defined as an “array formed by putting in succession in a single array the various arrays formed at any stage in progressive classification, the succession of arrays being such that the classes fall in filiatory sequences.

In order to achieve a helpful sequence in an array, we can use the principles of helpful sequence which are narrated as below:

1. Principle of Later-in-Time
2. Principle of Later-in-Evolution
3. Principle of Spatial Contiguity
  - 3.1 Principles for Entities along a Vertical Line :
    - 3.1.1 Principle of Bottom Upwards
    - 3.1.2 Principle of Top Downwards
  - 3.2 Principles for Entities along a Horizontal Line:
    - 3.2.1 Principle of Left to Right
    - 3.2.2 Principle of Right to Left
  - 3.3 Principles of Entities along a Circular Line:
    - 3.3.1 Principle of Clockwise Direction
    - 3.3.2 Principle of Counter-Clockwise Direction
  - 3.4 Principles for Entities along a Radial Line:
    - 3.4.1 Principle of Centre to Periphery
    - 3.4.2 Principle of Periphery to Centre
  - 3.5 Principle of Away-from Position
4. Principle for Quantitative Measure
  - 4.1 Principle of Increasing Quantity
  - 4.2 Principle of Decreasing Quantity
5. Principle of Increasing Complexity
6. Principle of Canonical Sequence
7. Principle of Literary Warrant
8. Principle of Alphabetical Sequence

#### **1.7.2.5.3.4 Canon of Consistent Sequence**

Whenever similar classes or ranked isolates occur in different arrays, their sequence should be parallel in all such arrays, wherever insistence on such a parallel does not counter to other in this canon, one can have following advantages;

- It leads to economy of time and mental effort

- It minimize the load on memory of a classifier, as well as a use:

The consistent sequence can be achieved as follows:

- (i) Same schedule is used wherever required in different subjects, such as common isolates or other devices.
- (ii) Parallel sequence can be obtained in different arrays, by means of principles for helpful sequence. This leads to a consistent sequence.

#### **1.7.2.5.1.4 Canons for Chain**

The two canons for chain of classes or subordinate classes deal with the process of division of knowledge which should proceed from general to specific and it should be properly regulated. These are as follows :

##### **1.7.2.5.1.4.1 Canon of Decreasing Extension**

According to this canon, while moving down a chain of classes is isolates, form its first-link to its last, the extension of the classes or isolates should decrease and the intension should increase at each step". The words 'extension' and 'intension' need some explanation. While extension is a quantitative measure, and intension is qualitative measure.

It may be kept in mind that this canon is applicable to classes or the isolates within the same chain. Therefore, the extensions of classes or isolates occurring in different chains can be compared.

##### **1.7.2.5.1.4.2 Canon of Modulation**

"A chain of classes or isolates should comprise one class or isolates of each and every order that lies between the orders of the first link and the last link of the chain."

This cannon has also been defined in terms of the concept of resolving power. According to which, "A chain of classes or isolates, as the case be, should be derived from the universe with the use of correct resolving power at each stage of division."

By resolving power it is meant the power of recognizing the subclasses or sub-isolates, as the case may be, appropriate to array of first order of an immediate universe.

##### **1.7.2.5.1.5. Canon for Filiatory Sequence**

The two canons for filiatory sequence state that a scheme of library classification should clearly identify both coordinate and sub-coordinate classes and they should be arranged among themselves according to their mutual affiliation.

##### **1.7.2.5.1.5.1 Canon of Coordinate Classes**

"Among the classes, no class or isolate with less affinity should come between two classes or array with greater affinity."

##### **1.7.2.5.1.5.2 Canon of Subordinate Classes**

'All the subordinates classes or isolates of a class in whatever chain they may occur, should immediately follow it, without being separated from it or among

themselves by any other class or isolate.”

#### **1.7.2.5.2 Canons for Verbal Plane**

The four canons for verbal plane deal with the language and terminology aspects in a scheme of classification. The terminology in the scheme should clearly indicated the context in which a particular term has been used and the aspects it explains. The terms used to denote concepts should be current and non-critical. Ranganathan formulated the following canons for work at the verbal plane:

##### **1.7.2.5.2.1 Canon of Context**

This canon states that, “The denotation of each term in a scheme for classification should be decided in the light of the different classes or isolates of lower order (upper links) belonging to the same primary chain as the class or the isolates denoted by the term.” In colon classification this canon is abundantly used in order to slim the different isolate terms, system terms and special terms in the various schedules.

The terms like physiology, ecology, disease, foundation and so on can occur in different subjects, and each of these terms can occur in many subjects. In deciding the class number of a book, one should keep in view the context in which the term—say physiology—has been used in the book. The context in the use of the term should coincide in both i.e. the book and the schedule chosen for assigning the Class Number.

In designing a schedule, one should not repeat any or all of the upper links, along with a lower links, as has been done in CC6. For example:

Y : 4 Social Pathology—Foci in (E) : 420 Degeneration; 421 Physical; 423 Mental; 425 Moral; 426 Spiritual;

In this case upper links are not repeated and thus will be able to achieve an economy in the schedules.

##### **1.7.2.5.2.2 Canon of Enumeration**

“The denotation of each term in a scheme for classification should be decided in the light of the classes or the isolates enumerated in the various chains having the class or isolate denoted by the term as their common first link.” In Colon Classification this canon is abundantly used in order to slim the different isolate terms, system terms and special terms in various schedules.

It may be pointed out that the denotation of a term might vary from scheme to scheme, but the uses of a scheme should try to use the canon of enumeration or to decide the denotation. While examining the schedules of two or more schemes, the weakness or strengths of these schedules can be judged.

##### **1.7.2.5.2.3 Canon of Currency**

“Each of the terms used to denote a class or an isolate in a scheme of classification should be the one currently accepted by these specializing in the subject field to which the scheme is applicable.”

This canon has two implications. Firstly, the terms chosen at the time of design of a scheme of classification should be in accord with the usage than currently accepted. Secondly, there should be some arrangement for changing over obsolete terms to current ones, as and when the need arises.

#### **1.7.2.5.2.4 Canon of Reticence**

“The term used to denote a class or a isolate in a scheme of classification should not be critical, i.e. express any opinion of the classificationist.”

The reticence is derived from the word ‘Reticent’, who’s dictionary meaning is ‘remain silent’. So according to this canon Ranganathan has opened that, in a scheme of classification, one should not use those terms which are critical. For example, in earlier editions of DDC the term ‘minor authors’ has been used. A person today may be considered a minor author, but tomorrow, he may be recognised as a major author. Then the scheme would have to change the terminology, and also reallocate the class number. Fortunately DDC stopped using this number from 16<sup>th</sup> edition onwards.

#### **1.7.2.5.3 Canons for Notational Plane**

The work of the Colon Classification in the notational plane is regulated by the following groups of canons.

##### **1.7.2.5.3.1 Feature of Notation**

Notation means a system of ordinal numbers representing classes and a scheme of classification. The twelve basic canons deal with the need for the removal of homonyms and synonyms in class numbers. The notation, according to these canons, should reflect hierarchy of classes. The base of the notation may be mixed or pure. However, the basic canons discuss the relative capacity of each of these two types. The notation may be faceted or non faceted. The canons nevertheless deal with the relative advantage of both kinds. The class number should be co-extensive or under extensive. The implications of these two varieties are also explained through these canons.

##### **1.7.2.5.3.1.1 Canon of Synonym**

“The class number of a subject in a system of class number and isolate number of an isolate ideal in a system of isolate numbers should be unique.” In other words each subject should be represented by only one class number and each isolate idea should be provide with a unique isolate number. Application of this canon will lead to the avoidance of synonyms. From 17<sup>th</sup> edition onwards DDC has stopped using synonymous class numbers. But UDC provides synonymous class numbers internally. For example:

Psychology for Teachers

159.9 : 371.1 or 371.1 : 159.9

Religion and Philosophy

2 : 1 or 1 : 2

But, CC avoids provision of synonymous class numbers, However, in space isolate '2' and '44' is used for India, But rules allow for a choice, once and for all, weather choice '2' which represents mother country of the library or '44' for India.

#### **1.7.2.5.3.1.2 Canon of Homonym**

"The subject represented by a class numbering a system of class numbers and the isolate idea represented by an isolate number in a system of isolate numbers, should be unique." In other words each class number should represent one and only one subject. Similarly, each isolate number should stand for one and only one isolate idea.

17<sup>th</sup>, 18<sup>th</sup> and 19<sup>th</sup> edition of DDC have shown a great deal of improvement for control of homonyms. But faceted scheme like CC6 has a greater facility to avoid homonyms.

#### **1.7.2.5.3.1.3 Canon of Relativity and Uniformity**

"The number of digits (including digit-groups treated as a single digit) in a class number or in an isolate number should be the same as the order of the subject or the isolate idea, as the case may be, represented by it." By this we mean that there should be exact representation of a subject in class number.

Where as, the canon of uniformity states that, "The number of digits in a class number or in an isolate number should be constant, whatever be the order of subject or the isolate, as the case may be, represented by it." In the context of the length of a class number, the concept of uniformity is opposite of relativity.

#### **1.7.2.5.3.1.4 Canon of Hierarchy and Non-Hierarchy**

"In a class number, or in an isolate number, there should be a digit to represent each of the characteristics used in constructing the class number or the isolate number, as the case may be."

Where as the Canon of Non-hierarchy states that, "In a class number or in an isolate number, there need not be a digit to represent each of the characteristics used in constructing the class number or an isolate number, as the case may be. "LC and BC follow the canon of non-hierarchy in many places.

#### **1.7.2.5.3.1.5 Canon of Mixed and Pure Notation**

"The base of the notational system of a scheme of classification should use two or more species of digits."

Where as Canon of pure notation states that "The base of a notational system in a scheme of classification should use one and only one species of digits."

As the universe of subjects is ever growing it is difficult to accommodate all the subject with the help of pure notation, but one should use a mixed base of notation consisting of Indo Arabic numerals, Roman capitals and Roman Smalls. CC and BC

have used the mixed base. DDC and UDC have a pure base each.

#### **1.7.2.5.3.1.6 Canon of Faceted and Non-Faceted Notation**

“A faceted notation should be used when the (i) length of the base of the notation is about 10 and the universe is likely to contain more than million or more entities or subjects; and (ii) length of the base is about 56 and the universe is likely to contain not more than 1000 million entities.”

It has been noticed that the capacity of a notational system in a faceted scheme is more than that in a non-faceted notational system. The faceted notational system provides small unit schedules with meaningful connecting digits, where as the non-faceted notational system provides the combination of class numbers instead of isolate numbers. So notation becomes comparatively longer and diminishes the hospitality.

#### **1.7.2.5.3.1.6 Canon of Co-extensiveness and Under-extensiveness**

“In a class number, digits should be added successively so as to represent the measure of incidence of even the very last characteristics in the succession of characteristics, admitted by the universe classified and relevant to the purpose of the classification.”

Where as the canon of under-extensiveness states that, “In a class number, it is not essential that the digits should be continued so as to represent the measure of incidence of the later characteristics in the succession of characteristics, admitted by the universe classified and relevant to the purpose of the classification.”

Colon classification has made a great effort to achieve co-extensive class numbers for macro-thought, with the help of guiding principles. UDC and DDC 19 has also made a good effort in co-extensive class numbers.

Ranganathan favoured the first cannon in each of the above five paris of canons in notational plane.

#### **1.7.2.5.3.2 Canons for Mnemonics**

The five canons for mnemonics deal with the need for different types of mnemonic devices, viz., alphabetical, scheduled, systematic, and seminal.

The term ‘Mnemonics’ originated from a Greek word, which meant ‘to remember’, or ‘to assist the memory’ in other words, by mnemonics we mean that, wherever a subject or form appears it has always the same notation through out the scheme of classification.” In modern classification, the notation possesses mnemonic quality to a great extent. For example, in common isolates in CC6, the encyclopedia is represented by Roman small ‘k’ which can be attached to any class, as follow:

Bk Encyclopedia of Mathematics; Ck Encyclopedia of Physics; Xk Encyclopedia of Economics; Yk Encyclopedia of Sociology; Zk Encyclopedia of Law.

As ‘k’ is common to all, so it has mnemonic value. Mnemonic notation has the following advantages:

- (i) it assists the memory of the classifier in constructing the class numbers;

- (ii) it helps in reducing the size of the classification schedules; and
- (iii) it enables the achievement of the consistent sequence in similar arrays.

In general canon of mnemonics, Ranganathan states that, “the digit or digit group used to represent a specific concept in a class number (or any of its constituents) should be the same in all class numbers having that concept represented in them, provided that insistence on such consistent representation does not violate more important requirements.”

But according to Foskett, the value of mnemonics is doubtful. For non-librarian user, mnemonic notation may not be ‘helping his memory’, while the classifier using a particular scheme will have little difficulty in remembering large amounts of notation, whether they are ‘mnemonic’ or not. So there is no need to modify the schedules of classification. Mnemonics may be of a limited value to a user, but these matter a lot to a classifier, a reference librarian and a classificationist. It does provide a systematic approach to the designing of a classification scheme.

Ranganathan recognized the following four kind of mnemonics:

- (1) Alphabetical mnemonics;
- (2) Scheduled mnemonics;
- (3) Systematic mnemonics;
- (4) Seminal mnemonics.

#### **1.7.2.5.3.2.1 Alphabetic Mnemonics**

“They should be rejected without any hesitation, if a sequence more helpful to readers or more filiatory than alphabetical sequence exists. Alphabetical mnemonics should be preferred, if the alphabetical sequence, is as helpful as any other sequence and if an interpolation nomenclature exists in the filed to which it is applied.”

The above canon lays emphasis on the use of alphabetical device, if international nomenclature is available in the concerned area of study. However, there are examples where vernacular names are accepted for international nomenclature. These names are certainly acceptable. Such as different brands of motor cars having destructive names, may be arranged alphabetically. The same can be applied in case of different strains of agriculture crops or cultivars.

DDC has provided options for an alphabetical arrangement at few places, in the schedules and auxiliary tables. For example, under ‘583 Dictoyledones’, it is mentioned, “Arrange by orders as below, but if preferred, arrange alphabetically by families.” Similarly, under ‘areas’ notation 74-79, alphabetical device is used.

CC also uses alphabetical device, “in respect of proper names, trade names, and certain technical nomenclature which are internationally current.” Thus, “if the exposition is confined only to generalic materials by and on a specific person, the digit z should be amplified by Alphabetical Device (AD) using the name of the person concerned for the purpose.” Thus zN represents Neheruana. Also in space isolate, “A physical feature is to be individualized, when warranted by Alphabetical Device (AD).” For example, Fauna of the Himalayan Mountains, the class number

would be K: 12.4.g.7H.

**1.7.2.5.3.2.2 Scheduled Mnemonics**

“A scheme for classification should use one and the same digit or digit-group, as the case may be, to represent an isolate idea or an array isolate idea, in whatever, subject it may occur.”

The use of devices and the schedules of common isolates, space isolates and language isolates automatically meet the requirements of the canon of scheduled mnemonics. A faceted classification with regard to the isolates in a facet also satisfies the canon.

In DDC, (i) an area table allows a number to be explained to indicate geographical significance, such as :

3.27.54 Foreign Policy of India; 915.4 Geography of India; 954 History of India

(ii) Provision in standard subdivision, also satisfy the canon of scheduled mnemonics, such as :

105 Periodical in Philosophy; 720.5 Periodical in Architecture; 631.505 Periodicals in cultivation and harvesting.

05, which stands for periodicals has been taken from standard sub-divisions.

(iii) DDC has adopted the use of parallel schedules at a number of places, and “Add to .....instructions for use are given in the schedules. It is possible only due to parallel subject developments, at one place and utilization of the same by analogy at other places. Under 016, bibliographies and catalogues of specific disciplines and subjects, the instructions are given as, “add 001-999” to base number 016. Also instructions has been provided under “026 libraries devoted to specific disciplines and subjects.”

CC uses large number of devices, such as chronological device, geographical device, subject device and provision of common isolates, meets the requirements of the cannon of scheduled mnemonics. CC has also adopted the use of parallel schedules at a large number of places, the instructions for which are given in the schedules. The complete schedule is given in the class context where it may have originated or where it may posses & primary scope.

<b>Basic Class</b>	<b>Facet</b>	<b>Parallel Schedule</b>
2	[M]	Same as [P] for “Generalia Bibliography”
NA	[P3]	22 Library Building. To be divided as the [P] of “2 Library Science”
S	(P)	8 Social. To be subdivide as [P] of “Y Sociology”.

**1.7.2.5.3.2.3. Systematic Mnemonics**

“In a scheme for classification, the digit used to represent the array isolate ideas in an array should run parallel to the sequence in which the principles for

helpful sequence would arrange the array isolate ideas.”

Some of the principles for helpful sequence used in CC for such a systematic arrangement leads to the following sequences:

- Time sequence
- Evolutionary sequence
- Spatial sequence
- Quantity sequence
- Complexity sequence
- Traditional or canonical sequence
- Literary-warrant sequence

The following examples are taken from Prolegmenas :

**(i) Time Sequence:**

<b>Subject</b>	<b>CC6</b>	<b>DDC</b>
Stratigraphy	H5	551.1
Archeozoic	H51	551.712
Primary	H52	551.72-551.75
Secondary	H53	551.76-551.77
Tertiary	H54	551.78
Quaternary	H55	551.79

**(ii) Evolutionary Sequence**

<b>Subject</b>	<b>CC6</b>	<b>DDC</b>
Medicine	L	610
Embryo	L9B	612.64
Child	L9C	618.92
Adolescent	L9D	—
Old Age	L9E	619.97

**(iii) Spatial Sequence**

<b>Subject</b>	<b>CC6</b>	<b>DDC</b>
Architecture, Building	NA2	721
Foundation	—	721.1
Floor	NA2, 3	721.6
Screen wall	NA2, 41	721.2
Roof	NA2, 6	721.5

**1.7.2.5.3.2.4 Seminal Mnemonics**

The canon of seminal mnemonics states that, “A scheme of classification should be one and the same digit to denote seminally equivalent concepts in whatever subject they may occur.”

In scheduled mnemonics the same concept is represented by the same term and the same number in all its places of occurrence. Whereas in seminal mnemonics,

the same concept is represented by the same number in all places of occurrence, but with different terms denoting it in the different places. So in Contrast to scheduled mnemonics, Ranganathan named the latter as 'unscheduled mnemonics', to indicate the difference. But Latter changed the name to 'seminal mnemonics' with the suggestions of Palmer and Wells.

For example, 'Physiology' in biology, 'function' in political science, 'social activates' in sociology are equivalent at the unexpressed seminal level and represented by the digit '3' Similarly, 'Plant pathology' in botany, 'diseases' in human bodies (Medicine), and social pathology in sociology are represented by the digit '4' and is called as seminal mnemonics.

So mnemonics serve as an aid to memory for those concerned with classification. It is a very useful quality of notation. CC has maximum advantage of mnemonic notation. The concept of seminal mnemonics used in CC has added to the value of scheme.

#### **1.7.2.5.3.3 Canons for Growing Universe**

The notational system for growing universe should satisfy canons for hospitality in array and chain. These are :

##### **1.7.2.5.3.3.1 Canon of Extrapolation in Array**

"An array of class numbers or of isolate numbers should admit of any number of new coordinate numbers being added at the beginning and at the end of the array." This canon can be satisfied by means of the gap device, using other species of digits, and the sector zing digits. CC, DDC and UDC use sectroizing digits.

##### **1.7.2.5.3.3.2 Canon of Interpolation in Array**

"An array of class numbers or of isolate numbers should admit of the interpolation of any number of new coordinate number at any point in the array." This canon can be satisfied with the help of gap device, mixed base, emptying digit and with the introduction of new species of digits.

All schemes use the gap device But the emptying digit has been employed in CC only. By emptying digit interpolation of class number or an isolate number between two consecutive numbers have been provided.

##### **1.7.2.5.3.3.3 Canon of Extrapolation in Chain**

"A chain of class numbers or isolate number should admit of the extrapolation of any number of successive links at its end. In other words, the notational system should admit of the chain, ending with any number, being lengthened : to any extent found necessary". This canon helps in implementation of the canon of decreasing extension for a growing universe. To a large extent, the efficiency of the scheme will depend on the devices adopted to achieve satisfaction of this canon. The devices employed for achieving extrapolation in chain are gap device and the domical fraction device. LC has used gap device. DDC, UDC and CC has employed decimal fraction

device.

#### **1.7.2.5.3.3.4 Canon of Interpolation in Chain**

“A chain of class number or of isolate numbers should admit of the interpolation of any number of links between any two consecutive links in the chain.”

At present, no suitable notational device is available for the interpolation of a missing link, or a newly emerging link requiring interpolation in a chain. BNB used [1] extension notation for the purpose.

#### **1.7.2.5.3.4 Canons for Book Classification**

The three canon for book classification deal with the provision of a system for construction of book number and collection number in a scheme of classification, and the sequence of these three elements—class number, book number, and collection number—makes a call number.

#### **1.7.3. Conclusion**

The postulates lay down the process of work in the idea plane. The canons lay down the rhythm of classification. The principles deal with the details of the arrangement of the isolates in the schedules. The laws, postulates, cannons and principles listed in the preceding paragraphs laid down a sound foundation for the Dynamic Theory of Library Classification. The application of the principles has amply been demonstrated in Colon Classification scheme. From the fourth edition, published in 1952, Colon Classification has been a freely faceted scheme of classification based on the laws, postulates, canons and principles discussed above. Prior to the fourth edition, Colon Classification was a rigidly faceted scheme.

The contribution of Ranganathan to the development of the General Theory of Classification is fundamental, unique and unparalleled. His concepts of facet analysis and fundamental categories have received wide acceptance. As a result, several special schemes of classification have been designed applying the concepts and principles formulated by Ranganathan in his *Prolegomena to Library Classification* (1967), and other books.

#### **1.7.4. Questions for Self-Check Exercise**

- Q.1. Name the different Basic Canons propounded by Sayers.
- Q.2. Enlist the principles of helpful sequence.

#### **1.7.5. References and Further Readings**

- Bliss, H.E. : *System of Bibliographic Classification*. New York: H.W. Wilson, 1935.
- Brown, J.D. : *Manual of Library Classification and Shelf Arrangement*. London: Library Supply Company, 1906.
- Krishan Kumar : *Theory of Classification*. 4th ed., New Delhi: Vikas, 2006.

- Ranganathan, S.R. : *A Descriptive Account of the Colon Classification*.  
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Banglore : Sarda Ranganathan Endowment for Library  
Science, 1967.
- Sayers, W.C.B. : *A Manual of Library classification*. 3rd ed. London: Andre  
Deutch, 1964.

### 1.7.6 Answers to Self-Check Exercises

#### Q.1

- |     |                                      |   |
|-----|--------------------------------------|---|
| (1) | Canon of definitions                 | 6 |
| (2) | Canon of divisions                   | 7 |
| (3) | Canons of terms                      | 4 |
| (4) | Canon of book classification         | 4 |
| (5) | Canon of notation                    | 5 |
| (6) | Canon of book classification schemes | 3 |

#### Q.2

**Principles of Helpful Sequence :** To achieve a helpful sequence of entities in an array, Ranganathan formulated eight Principles of Helpful Sequence. These are :

1. Principle of Later-in-Time
2. Principle of Later-in-Evolution
3. Principle of Spatial Contiguity
  - 3.1 Principles for Entities along a Vertical Line:
    - 3.1.1. Principle of Bottom Upwards
    - 3.1.2. Principle of Top Downwards
  - 3.2 Principles for Entities along a Horizontal Line:
    - 3.2.1 Principle of Left to Right
    - 3.2.2 Principle of Right to Left
  - 3.3 Principles of Entities along a Circular Line:
    - 3.3.1 Principle of Clockwise Direction
    - 3.3.2 Principle of Counter-Clockwise Direction
  - 3.4 Principles for Entities along a Radial Line:
    - 3.4.1 Principle of Centre to Periphery
    - 3.4.2 Principle of Periphery to Centre
4. Principles for Quantitative Measure
  - 4.1 Principle of Increasing Quantity
  - 4.2 Principle of Decreasing Quantity
5. Principle of Increasing Complexity

6. Principle of Canonical Sequence
7. Principle of Literary Warrant
8. Principle of Alphabetical Sequence

**DEVELOPMENT AND TRENDS IN CLASSIFICATION :  
ROLE OF COMPUTERS**

The nature of information sources are increasing in value, volume and variety at a tremendous speed. According to fifth law of library science, library or information center is a growing organism. It must grow in all direction in order to cope with the challenges of the modern society. The evolutionary law of Darwin, i.e. 'survival of the fittest' is equally true and applicable to the library classification – backbone of the organization of information material. Library classification has become increasingly important. Its importance will increase further, due to greater emphasis being laid on the provision of information service in libraries/information centres. For the organization and tools according to modern trend is unavoidable. Introduction of communication and Computer Technologies furthered this.

The focus of discussion of present lesson is 'Development Trends in Classification : Role of Computer', The history, trends and developments in library classification can be traced form the year 1876, when Melvil Dewey devised and published Decimal Classification. But as you have covered all this in the fourth unit in detail, therefore, in the present context the period after 1850 is taken as milestone for further discussion.

**1.8.0 Objectives**

After the deep study of the unit you will be able to fish out :

- (i) Historical developments in the field of library classification;
- (ii) Trends in Classification; and
- (iii) Role of Computer.

**Structure of the Lesson**

To achieve the aforesaid objective, the lesson is tailored as under:

- 1.8.1. Introduction
- 1.8.2. Development during fifties
- 1.8.3. Development during Sixties
- 1.8.4. Development during Seventies
- 1.8.5. Development during Eighties and Nineties
- 1.8.6. Conferences
- 1.8.7. Trends in Classification

- 1.8.8. Automatically Constructed Classification
- 1.8.9. Future of General Classification and Computers
- 1.8.10. Classification and the Computers
- 1.8.11. Conclusion
- 1.8.12. Self-Check Exercise
- 1.8.13. References and Further Reading
- 1.8.14. Answers to the Self-Check Exercise

### **1.8.1. Introduction**

The period after the foundation of FID/CA in 1950 can be called as golden period of Library Classification. During this period the dynamic theory of Library Classification has been placed on sound footing by which the process of designing a scheme of classification was equipped with a sound methodology. This methodology enables one to organize new subjects and already known subject in their proper place without any problem or disturbance to the existing sequences of classification. The fruit of this development was a freely faceted analytico synthetic scheme for Library Classification, which is certainly better equipped to face the onslaught of the universe of subjects. This period was pioneered by Dr. Ranganathan, a genius of twentieth century.

Many national and international organizations and associations played a very important role in promoting Library Classification to meet the demand of modern information society. Therefore, for the discussion of development and trends in classification the activities and achievements of these will be taken into consideration in a chronological frame-work. The pioneer institutions in this area are International Federation for Information and Documentation (FID), Classification Research Group (CRG), Documentation Research and Training Centre (DRTC) and International Society for Knowledge Organization (ISKO). In individual capacity, Dr. Ranganathan always played key role in the development of Library Classification Theory.

### **1.8.2. Development During Fifties**

Following are the main development in library classification :

#### **1.8.2.1 Federation for Information and Documentation (FID / CR**

In 1946, FID/CA (General Theory of Classification) was formed. In 1962, FID/CA was renamed FID/CR Classification Research. Ranganathan was the rapporteur-general as well as the moving spirit behind FID/CA during its early period. He submitted annual reports from 1951 to 1956, which are remarkable documents. The FID/CR report series is an important contribution. These report research activities on a given aspect of classification in a country.

#### **1.8.2.2 Classification Research Group (CRG)**

A memorandum entitled "The need for a faceted classification as the basis of all methods of information retrieval" in 1955 was published. The memorandum emphasized three basic ideas, namely, facet analysis as the basis of Library Classification; Farrandane's theory of relationship; and the use of simple notation. The members concentrated on the construction and use of special schemes of classification. They formulated many schemes. These were faceted ones, based mainly on the principles propounded by S.R. Ranganathan.

### **1.8.2.3 Dr. S.R. Ranganathan**

S.R. Ranganathan was able to achieve the following from 1950 to 1956:

- (i) He concluded that each isolate facet of a subject can be considered as the manifestation of one and only one of the five fundamental categories called PMEST;
- (ii) He prescribed different connecting symbols (later called indicator digits) for the different fundamental categories. However, connecting symbols for time and space were the same;
- (iii) He formulated a generalized facet formula;
- (iv) He put forward the concepts of rounds and levels;
- (v) He realized the need for a long base of a notational system by the use of mixed notation; and
- (vi) He succeeded in the development and application of the concept of zone analysis along proper lines.

### **1.8.2.4 General Schemes of Classification**

2.4.1 *Bibliographic Classification* appeared in its complete form between 1940 and 1953. Bliss based the scheme on principles of classification. This is considered an important scheme of classification. The Standard (fifteenth) edition of DDC appeared in 1952, but was found to be inadequate by its users. Therefore, a revised standard (fifteenth) edition (1953) came out. This also did not get favourable response due to the reduction of tables as well as the inadequacy of its index. The revised edition had a completely restructured relative index. The sixteenth edition came out in 1958. It was the first edition to be brought out with the cooperation of the Decimal Classification Editorial Policy Committee and the Library of Congress.

2.4.2 *Library of Congress Classification* is an enumerative scheme of classification. It lacks the theoretical basis. The scheme consists of a set of schedules, developed independently to some extent. The schedule of law had not been printed. The individual schedules are kept current within the limitations of the scheme.

2.4.3 UDC is an almost faceted scheme. It is guided by implicit principles leading to subjective decisions. Its revision policy in the fifties was extremely slow, and major changes were avoided due to pressures from its user. The complete edition did not exist, which was a handicap for English-knowing users of the scheme.

### **1.8.3. Development during Sixties**

During the 1960s, much progress took place in different areas of Library Classification. The design of classification schemes and the application of machines to information retrieval were the two major areas in which tremendous advances took place.

#### **1.8.3.1 Classification Research Group**

In the 1960s, the CRG turned its attention towards a study of the relation between special and general classifications, and the problems relating to the construction of a new general classification. The contribution made by the members is reflected in the work entitled *Classification and Information Control*. In 1962, the NATO Science Foundation awarded the Library Association, a grant of 14,000 dollars to study the feasibility of a new general classification scheme and the Library Association appointed the CRG as its agent for this research project. Helen Tomlinson worked during 1964-68 and Darek Austin from 1968 to 1969 on this project.

CRG concentrated on :

- (i) Determining of principles for the categorization of concepts;
- (ii) Ordering of concepts within categories; and
- (iii) Relationship between concepts.

CRG came to the conclusion that certain principles had been discovered which could provide a solution to the problems faced in the formulation of general schemes, and it would be necessary to construct two classified thesauri-one of entities and the other of attributes organized according to the above mentioned principles. Classifying would consist of selecting terms from thesauri and linking their notational elements, using the set of roles developed by Darek Austin.

#### **1.8.3.2 Documentation Research and Training Centre (DRTC)**

The Documentation Research and Training Centre (DRTC) was established in Bangalore in 1962. S.R. Ranganathan organized and developed this centre. The staff of DRTC has been actively engaged in research on classification and related areas. DRTC has been engaged mainly in areas, namely, the study of structure and development in the universe of subjects, development of a theory of library classification and design, revision and continuous updation of schemes for library classification. Another area has been the application of computers.

DRTC has also been looking after the revision of *Colon Classification*, and bringing out depth schedules.

Along with the Sarada Ranganathan Endowment for Library Science, it started a quarterly journal, called *Library Science with a Slant to Disorientation*, in 1964. This journal mainly concentrates on classification. *Annual Seminar of DRTC* was started in 1963, and is being published since then. A number of its issues have been devoted to classification and allied areas. Research done at DRTC is covered in the above journals.

#### **1.8.3.2.1 Theory of Library Classification**

In 1962, Ranganathan formulated a principle called the 'wall-picture principle' for determination of the sequence between isolates ideas deemed to be a manifestation of the same fundamental category. In 1963, work on a theory in the notational plane led Ranganathan to the idea of an emptying digit. It is novel idea to provide infinite hospitability in an array. In 1966, he came to the conclusion that the property of an entity is the manifestation of the fundamental category matter. This has important implications for the designing of schedules. In the same year, he propounded the concept of a subject bundle. The need was realized to formulate a dynamic theory to guide the work of classification. In this context, Ranganathan came to an important conclusion, that the work of classification be separated into three planes (namely, the idea, verbal and notational planes.) However, this finding was put into operation, in a conscious manner, only in 1967. This led Ranganathan and his band of researchers to make much progress in the field of library classification. It also shows the importance of separating the work of classification according to the levels of work.

The third edition of *Prolegomena to library classification* is an invaluable contribution to the subject of library classification. There is no doubt that it is an outstanding work of the decade. It has helped in establishing the classification theory as a fundamental subject of study on a firm basis.

#### **1.8.3.2.2 Methodology for Designing**

Ranganathan published an article entitled *Design of Depth Classification* in 1964 (*Library Science*, 1, 1964, pp. 1-42). This is a classic article, which describes the methodology for design in a scientific way. The depth schedules prepared in India are mostly based on the above article. The methodology of design has been developed to a high level of DRTC, and work is still going on.

#### **1.8.3.2.3 Colon Classification**

The sixth edition of Ranganathan's *Colon Classification* appeared in 1960. In it, he avoided the use of Greek letters. Many of the schedules were revised.

In 1961, it was suggested that the single inverted comma (as an indicator digit for the time isolate instead of a dot) be used to overcome rigidity in *Colon Classification*. This was an important idea.

The sixth revised edition of *Colon Classification* was published in 1963. An annexure was added in the revised edition, where the inverted comma was prescribed as an indicator digit for the time facet. A few corrections and minor changes were also included.

Ranganathan's *Colon Classification* edition 7 (1971) : A Preview appeared in 1969. This described the changes which are likely to take place in the seventh edition. It indicated how the libraries could change over to the new edition. The changes suggested are the major ones, which would take CC towards a freely faceted scheme. The schedules are going to be overhauled, keeping in view the latest ideas in notational techniques, greater use of emptying digits, zone analysis, use of new indicator digits and so on.

#### **1.8.3.2.4. Application of Computer**

In May 1968, DRTC initiated experiments to determine the feasibility of using a general-purpose computer in a document-finding system, based on a classified catalogue system using a freely-faceted version of CC. The results have been encouraging.

Experiments were also carried out to design a special-purpose, computerized document-searching aid called 'Doc-finder'. The objective was to establish a one to one correspondence between the specific need of a specialist at the moment and the documents recorded in the memory of the Doc-finder the expectation being that depth classification would make the work of the Doc-finder leak proof as well as noise-proof.

The use of a computer for synthesis of the class number with a freely faceted version of *Colon Classification* has been described by A. Neelameghan and S. Venkataraman.

#### **1.8.3.3. General Schemes of Classification**

##### **1.8.3.3.1 Dewey Decimal Classification (DDC)**

The seventeenth edition of DDC appeared in 1965, in two volumes. It has a reasonable amount of relocation. A whole new schedule for 150 (psychology) was assigned. From divisions were redesigned into standard subdivisions. The area tables was separated as an auxiliary. 'Add to replaced 'Divide like'. The index was so poor that a revised index had to be brought out in 1967. *Dewey Decimal Classification : Additions, Notes and Decisions* is a useful publication, which keeps the users of the scheme informed about changes taking place.

### **1.8.3.3.2 Rider's International Classification**

Rider's International Classification appeared in 1961. This scheme is for the arrangement of books on shelves of general libraries. It is an enumerative schemes of classification, providing readymade class numbers.

### **1.8.3.3.3. Universal Dewey Classification**

Much research has been done on the use of UDC as a language for information retrieval. In the United States, research on UDC in computer-based retrieval. In the United States, research on UDC in computer-based retrieval systems had been carried out by R.R. Freeman and P. Atherton in late 1960s, in the AUDACIOUS (Automatic Direct Access to Information with an On-lineUDC System) project at the American Institute of Physics. Similar research has been done by M. Rigby and T.W. Caless and others, who have tried to evaluate UDC as a tool for computer retrieval, and discussed means and ways for its manipulation. Similar research has also been done in other countries.

They have demonstrated the feasibility of UDC as a machine-indexing language.

### **1.8.4. Developments during Seventies**

Following are the milestones in the field of library classification development during this decade:

#### **1.8.4.1 Classification Research Group (CRG)**

No general scheme suitable for computer retrieval existed. Therefore, it was decided to develop a general classification in association with the UK MARC project for an automated retrieval system. The theory of integrative levels is being developed and it would possibly be used to serve as a basis for the arrangement of concepts in the new general classification scheme.

CRG believes that enough knowledge is available regarding theory of Document information retrieval systems to enable designing of a new general scheme, which would be satisfactory for libraries and information centres in all subjects, general as well as special. This would also be useful to some extent for machine-based retrieval systems.

PRECIS (Preserved Context-Indexing System) is a by-product of the continuing research for a general classification scheme. PRECIS is a direct descendant of faceted classification.

Members of CRG have continued to produce special schemes in a wide variety of areas of specialization, especially in science and technology.

#### **1.8.4.2 Documentation Research and Training Centre (DRTC)**

FID/CR Secretariat had shifted to DRTC at Bangalore for a few years. There is every possibility that the work being done at DRTC and elsewhere in India would get greater attention at the international level.

Fifty-five depth versions of Colon Classification schedules were produced, covering various areas, during the 1970s till April 1974. However, much still remains to be done.

In order to meet the explosion of knowledge, many new indicator digits have been accepted and incorporated into the new edition of CC.

Now we have an advanced version of the dynamic theory of library classification. The problem with existing general schemes of classification is that these are not freely faceted in the sense in which we understand it today.

The seventh edition of Colon Classification was expected to be published in late sixties, but it has eluded its users so far. "Colon classification edition 7 (1971) : a preview" was published in Library Science.

POPSI (Postulate-based Permuted Subject Indexing) is being developed at DRTC. It is a procedure for implementing the policy of 'grouping by juxtaposition'. It has a strong classificatory base. The result has been encouraging.

#### **1.8.4.3 General Schemes of Classification**

##### **1.8.4.3.1 Dewey Decimal Classification (DDC)**

DDC 19 appeared in 1979 in 3 volumes. The past four editions, 16 to 19, have been edited under the direction of Benjamin A. Custer. This edition has been produced by computerized photocomposition.

The latest edition has been updated to keep pace with the growing universe of subjects.

It represents a consolidation of the efforts towards revisions and additions carried out in 17<sup>th</sup> and 18<sup>th</sup> editions. DDC 19 contains more entries and provides more scope for building class numbers.

New schedules have been provided for sociology and political process. There is greater recognition of the possibility of subdividing various subjects according to more than one characteristic. There are more notes and instructions.

##### **1.8.4.3.2 Universal Decimal Classification (UDC)**

Till recently, UDC was revised keeping in view maximum stability. But now, it is undergoing overhauling process, so that it can serve the purpose of international cooperation and standardization of documentation practices; in order to make it more amendable to information retrieval.

UDC has an important organization looking after it, which is financially sound. Its revision policy is affected by the viewpoint of well-established users, who seem to be against any drastic change. Despite this, attempt is being made to give it a scientific base to meet the wishes of its new users.

The publication of full editions of UDC has been slow. Therefore, it has been suggested that the computer be used to update its schedules.

In order to save time and costs, A.C. Foskett has suggested the idea of producing Computer Output on Microfilm (COM), instead of a hard copy. Under this procedure, revision would be concerned with the feeding of new data, which would be in the form of corrections and additions to the existing file.

Computers have been used for the maintenance and display of UDC schedules, in the preparation of its index, and for the UDC control of vocabulary language in a thesaurus.

The findings of the American Institute of Physics on the UDC project under R.R. Freeman and P. Atherton formed the main theme of the *First Seminar on UDC in a Mechanized Retrieval System*, and the same subject continued during the second seminar held at Frankfurt in 1970. These seminars led to the conclusion that UDC can be used as an indexing language in a mechanized system, using either a batch processing or interactive mode.

Experience shows that the use of well constructed thesauri, along with hierarchical schedules of a scheme like UDC, could led to better search as well as retrieval control than the use of either one of these. The combined use of UDC and a thesaurus was one of the main themes of an international symposium held at Herceg Novi, Yugoslavia.

There have been many attempts to use mechanized UDC based systems for storing information about documents. Such systems have been used for various purposes, like the control and display of bibliographic citations, SDI, file maintenance, on-line interactive retrieval, library routines and services, and so on.

#### **1.8.4.3.3 Broad System of Ordering (BSO)**

At the FID conference held in Budapest in 1972, it was resolved to increase the size of the FID/CCC panel formed in 1971, to serve as a working group called FID/SRC for the purpose of preparing a Subject-field Reference Code, which would serve as the Broad System of Ordering (BSO) needed for UNISIST. The basic idea was to prepare an independent 'roof classification' to control the transfer of large amounts of information between constituent centres, systems and services using different indexing languages, special classification, thesauri and so on. In other words; it was intended to prepare a broad classification to serve as a switching language between different information systems. Thus a broad classification was aimed to serve as a switching mechanism to link different classifications, indexing languages and thesauri in the process of information transfer between information centres in a network. This could also be used for referring to the contents of the existing information systems. Later, a small panel FID/BSO, consisting of three persons, namely, Eric

Coates, Lloyed Geoffrey Dusan Simandl, was appointed from among the FID/SRC members, to prepare and complete a single (merged) BSO for UNISIST. BSO is basically discipline-oriented, but the class for human needs has also been provided; this is in addition to usual subjects like arts, crafts and technology. The BSO code is meant for organized information sources, but not for the classification of documents.

### **1.8.5. Development During Eighties and Nineties**

The Fourth International Study Conference on Classification Research was held in Augsburg (W. Germany) from 28<sup>th</sup> June to 2<sup>nd</sup> July 1982. The conference was organized by FID/CR in collaboration with IFLA section on Classification & Subject Cataloguing and Gesellschaft für Klassifikation. The theme was 'Universal Classification; Subject Analysis and ordering systems'. The aspects covered included (a) General principles and policies, (b) Structure and logics of indexing language; (c) Empirical investigation and practical use.

Due to empirical research which is coming up, it was considered desirable to regard the discipline of classification science as a science in its own rights. Stress was laid on evaluation of existing classification systems and user needs before developing new information systems. Application of procedures of data and cluster analysis in knowledge organization and information retrieval was emphasized. The emphasis was laid on universality of approach applying principles of complementarity and transdisciplinarity approach. Need was felt for greater empirical research in classification and formulation of a unified theory of classification.

The important recommendations were "(i) To study the extent to which general principles of classification can play part in improving the effectiveness of IR systems; (ii) To develop classificatory aids for on-line searching situations. "

#### **1.8.5.1 General Classification Scheme**

Following developments were noticed in the field of general classification schemes:

##### **1.8.5.1.1 Dewey Decimal Classification (DDC)**

In Dewey Decimal Classification the number of volume have increased from 3 to 4 in 20<sup>th</sup> edition (1989). These volumes were:

- (1) Volume 1 : Introduction and tables
- (2) Volume 2 : Schedules (000-500)
- (3) Volume 3 : Schedules (600-900)
- (4) Volume 4 : Relative Index and manual.

21<sup>st</sup> edition (1996) of D.D.C. was edited by John S. Michell and it too has four volumes. Salient features of 21<sup>st</sup> edition are :

- (a) As compared to 20<sup>th</sup> edition the relative index of 21<sup>st</sup> edition has more

- entries.
- (b) New headings have been incorporated and old and vague headings have been eliminated.
  - (c) 'Examples' and 'Certain Notes' have been replaced by 'Including Notes'.
  - (d) The U.S. and Christian bias contained in History and Religion Schedules of previous editions have been reduced.
  - (e) Manual as contained in Volume 4 has been expanded.

#### **1.8.5.1.1.1 Emphasis on Syntheses of Numbers**

There is a distinct trend towards synthesis of class number. Such a trend is more pronounced in 500 and 600 classes.

More Instructions for users and for the classifier are given in much detail.

#### **1.8.5.1.1.2 Computerization of DDC**

In July 1988, Forest Press, the publisher of DDC, became a division of On-line Computer Library Centre (OCLC). With this change, DDC joined the computer generation. DDC 19<sup>th</sup> edition had been printed from the computer tape in 1974. The following years witnessed the emergence of a sophisticated computer-based editorial support system and data base used to produce DDC 20 and 21 editions. DDC 21 appeared in two formats. Dewey for Windows, a Microsoft Window TM-based version was released in August 1996. It is a CD version. Dewey home page contains current information on Dewey Decimal Classification. It is available at URL : <http://www.oclc.org/fp/>.

#### **1.8.5.1.2 Universal Decimal Classification (UDC)**

UDC was developed on the basis of DDC. The scheme was revised form time to time by FID.

#### **International Medium Edition (IME)of UDC (1985-1993)**

IME of UDC was published with more extensive divisions to replace abridge English editions. It comprises following 2 parts:

Part-I: Systematic Tables (1985)

Part-II: Alphabetical Subject Index (1988)

The salient feature of this edition is that in addition to various signs and symbols already provided in Abridged English Edition of UDC; two more symbols of arrow (—>)and parallel division (=) were added.

#### **1.8.5.2 Internet and Library Classification**

Internet, the largest store-house of information has around 100 million pages of information. To find the required information from internet has become very easy. Attempts have been made to apply library classification scheme for retrieval of information on network. Advantages of adopting library classification schemes

are:

- (i) Enhanced Subject Search Facilities
- (ii) Possibility of Multi-lingual Access
- (iii) Facility of portioning of large Database

### **1.8.6. Conferences**

Following are important conferences held for the discussion of library classification:

#### **1.8.6.1 Dorking Conference**

The first International Study Conference on Classification for Information Retrieval was held at Dorking in 1957. The conference suggested the need for a faceted classification as the basis of all methods of information retrieval. Indexing or classification or automated selector were considered various systems of information retrieval. This set a trend towards faceted classification.

#### **1.8.6.2 Elsinore Conference**

The Second International Study Conference on Classification Research, held at Elsinore in 1964, had 60 participants and six observers. Sixteen nations were represented.

The topic of the conference was a broad one, covering the general theory of classification, research in mechanized classification, selected specialized schemes and evaluation techniques.

#### **1.8.6.3 Bombay Conference**

Information revolution is taking place. This has social consequence, which has resulted in the concept of information network. This has brought forth the need to formulate a programme for setting up 'ordering systems for global information net-work' to be carried out by authorities and agencies. This was the theme of the Third International Study Conference on Classification Research, held in Bombay in 1975. At this conference, there were 55 contributors (43 from abroad and 12 from India) and 66 observers (eight from abroad and 58 from India). In the context of the theme, classification, thesauri building, and indexing techniques were considered as information-ordering methods. In view of the above, classification will have to play a new role.

This conference may be considered an important landmark. This has given fillip to the application of computers, with cooperation at the global level. This has also led to in-depth examination of indexing methods and switching languages.

### **1.8.7. Trends in Classification**

The use of Dewey Decimal Classification is increasing. However, in the United States, there is trend in academic libraries to switch over from DDC to LC. In any

case, DDC is being used by the largest number of libraries.

A study was conducted by Mowery, in the United States, to find out the extent to which libraries of four-year colleges and universities have adopted the Library of Congress Classification schemes. It was found that between 1967 and 1971, the percentage of institutions which were using LC increased in every category. In 1967, DDC users outnumbered LC users in these categories, but in 1971, they outnumbered LC users in one category only. In 1968, 1969 and 1971, there were 70, 40, 29 and 20 libraries respectively, which adopted LC. It shows that the trend to adopt LC has lost momentum.

In Great Britain, certain public libraries have changed from the scheme of Subject Classification to DDC in recent years, and some academic libraries have abandoned obsolete schemes for flexible ones devised by them.

UDC is being accepted by more and more countries. It is finding greater acceptance amount documentation centres and for documentation work.

Three planes of work isolated by Ranganathan are beginning to be recognized. Experience shows that separation of the work of classification according to three planes gives better results. There is certainly a trend towards centralized classification services. In this context, MARC projects of the Library of Congress and BNB have an important implication for classification.

According to Dahlberg, the new trends in classification are :

1. The realization that the present situation calls for a resurveying of the totality of knowledge and for measures to bring about compatibility between existing classification systems and thesauri;
2. The realization that the elements of classification systems are concepts which may be understood as units conceptual relationships can be determined and, on that basis, reproducible thesauri and classification system can be built up; and
3. The realization that classification and indexing are of necessity complementary activities, with classification establishing the relationship to existing knowledge and indexing complementarily serving for indicating partly with the aid of new and names-the new knowledge.

For a long time, techniques like classification, alphabetical indexing and mechanical selection were regarded as different ones. Each had a different terminology, to the extent that a specialist in one field could not follow completely the terms used by others. However, it is becoming clear today that all methods of subject indexing face similar problems. Thus, similar solutions are

being tried out.

The trend is towards information network. This is due to economic pressure and explosion of knowledge. Information networks lead to large-scale information systems. These require greater cooperation, as well as the standardization of practices. In this scheme of things, classification is being regarded as a vital tool of information retrieval. As such, the schemes of classification and the theory of library classification are being developed in this light.

#### **1.8.8. Automatically Constructed Classification**

Gerald Salton, M.E. Lesk and K.S. Jones have done good work in this area. The first phase (1958-64) was concerned with the studies relating to the feasibility of automatic classification. The second phase (1964-74) was concerned with experimental studies. In the third phase (1975- ), practical applications have started. Some are of the view that these computer-generated classifications are rarely relevant for libraries because of the costs involved. Besides, libraries having established systems of classification would be hardly willing to accept computer-generated schemes for information-retrieval with computers. However, it may be pointed out that such schemes are not appropriate for most libraries, or even for most semi-automated retrieval systems. But their application to specialized data banks is feasible. The application of computer-generated schemes to computerized information-retrieval systems had not proved to be as successful as was thought, at one stage around 1975.

#### **1.8.9. Future of General Classification Schedules**

On the basis of present-day trends, we can possibly speculate on the future of general schemes of classification. There are some chances for the survival of *Bibliographic Classification*. The future of *Colon Classification* is uncertain because of the passing away of Ranganathan in 1972, and the slow speed of revision taking in it. LC and DDC will maintain their hold. UDC is also likely to be adopted by an increasing number of libraries.

It had been found that none of the existing schemes of library classification are fully suitable for the arrangement of a mechanized information store. Thus, a new general scheme is needed to serve this purpose.

With the increasing capability of computers, it will also have greater efficiency for the classifying and indexing of information in the years to come. It will become possible to give a feeling to a user, at the time of consultation, that the information file is classified according to his interest. It is expected that with the availability of more powerful machines, their usefulness in the area of classification

will also increase.

Basically speaking, there are two lines of development. One is that of Ranganathan and his disciples in India. The other one is that of CRG. The future line of development is more likely to take place along the lines being set up by CRG, because of its influence at the international level.

In the years to come, we are likely to have large-scale, multiorganizational, multi-national information systems. There are many such programmes at the international, global and regional levels, which are being worked out. UNISIST is one such programme. The MARC project is another one, which deserves our attention here. Their aim is to facilitate the sharing of information and knowledge and the establishment of a world-wide information network. The future of classification would depend upon the kind of role it is able to play in the above context.

#### **1.8.10. Classification and the Computer**

Many references to computerization have already been made in the discussion of development and trend in classification, but in contemporary classification for information retrieval, it deserves a separate short discussion.

The eighteenth-century Italian Jesuit, Saverio Bettinelli, once predicted an age of bibliographic Malthusianism, when the birth-rate of newly recorded knowledge would exceed man's ability to store and exploit it; such a time despite increasing specialization by experts in all fields. There are two factors relating to it:

- (1) The active steps taken by librarians and information scientists show only what is available on the needed subject. It must also be sufficiently subtle to demonstrate that we can afford to ignore;
- (2) The other factor is the boon of mechanization. In this direction, digital computers in particular have demonstrated convincingly their ability to take over logical routine library 'housekeeping' operations and to relieve staff of repetitive drudgery. They have also had a tremendous impact on library cataloguing.

No doubt that the computers will continue to gain ground, but what are their specific purposes and achievement in relation to classification? One such achievement is that they can be of great assistance in speeding up the revision of conventional classification schemes. This has already been done in the revision of DDC and UDC.

The aid which computer can give in the prompt revision of classification schedules is considerable, but there is no doubt, its greatest links with classification and allied processes lie in the sphere of Information Storage and Retrieval (ISRA). A

present, certainly some computer applications in information retrieval rely heavily on classification, conventional or otherwise, but others do not, and there are even works on the subject which omit the word classification from their contents and index.

The ability of the computer to tackle enormous work loads which are beyond the limits of the human brain or manual storage systems, and its ability to merge new data quickly into an existing file or bank. But before adopting it following factors must be taken for considerations:

- (i) The costs of computer applications;
- (ii) The information store must be very large;
- (iii) Time required in preparing information in a form suitable for computer searches or to conform to machine requirements;
- (iv) Unless time-sharing facilities are available, the simultaneous access to the information store by a number of users may be possible;
- (v) In some computers, the applications of the data of 'fixed field' whereby a certain maximum number of spaces is reserved for descriptors or class marks, is a limitation, but this is highly unlikely to prove an enduring one in mechanized systems;
- (vi) The distinctive rules of computer filing may also give rise to some minor problems in retrieval;
- (vii) The computer do not contribute to the creative and intellectual work of a skilled human indexer in analysis.

Inspite of all these aforesaid factors, there is a potential scope for computers in preparing for tomorrow's indexing. Schedule can be updated with their aid, as we have seen, or a particular procedure, say SLIC indexing, could be mechanized. The construction of large thesauri can be aided by the mathematical selection of key-words from the literature. The task of providing a comprehensive index to LC and of removing waste, inconsistency or ambiguity from vast vocabularies also seems to suggest the use of mechanization. The computer could also be used advantageously to compare the details, specificity and coverage of various languages. But when we think of computers and classification, we tend naturally to consider retrieval systems first and foremost.

Much more can be achieved both in effective implementation of controlled indexed language and in automatic indexing tests with the help of computer technology. Computer output on microfilm coupled with peek-a-boo scanning facilities, for instance, is now being investigated. In many ways classificatory type

of browsing is more in common with the simulating role of the analogue computer than with numerical calculations and wonders if the digital computer is really the right tool for the mechanized ISAR programmes of coming years.

### **1.8.11. Conclusion**

There was a time, around the early 1960s, when it was felt that interest in library classification would decrease; but instead of that it has been on the increase. This is apparent from the increasing amount of literature indexed in *Library Literature*, as well as increasing participation in international conferences on classification. The number of papers contributed in this field has also increased substantially. More and more library classification research study circles are being formed. It may be pointed out that during recent years, a variety of person belonging to different disciplines have shown interest in classification, such as psychologists, philosophers, logicians, scientists, taxonomists, semioticians, historians of science, and so on. This has given impetus to the growth and development of library classification.

Again, the computer is an extremely powerful tool and its potentialities are also being exploited. All this has brought about new recognition of the subject of library classification during the last 25 years or so.

### **1.8.12. Questions for Self Check Exercise**

Q.1 What are the contributions of Dr. Ranganathan during fifties.

Q.2 What do you understand by B.S.G.

*Note:* Please check you answers with the answers given at the end of the lesson.

### **1.8.13. References and Further Readings**

- Bliss, H.E. : *System of Bibliographic Classification*. New York: H.W. Wilson, 1935.
- Brown, J.D. : *Subject Classification*. 3rd ed. London: Grafton, 1939.
- Hunter, E.J. : *Classification made simple*. U.K. : Gower, 1988.
- Krishan Kumar : *Theory of Classification*. 4th ed., New Delhi: Vikas, 1988.
- Ranganathan, S.R. : *A Description Account of the Colon Classification*. Bombay : Asia, 1967.
- Ranganathan, S.R. : *Prolegomena to Library Classification*. 3rd ed. Bangalore : Sarda Ranganathan Endowment for Library Science, 1967.

## **Concept of Call Number: Class Number, Book Number and Collection Number**

### **Structure**

#### **1.9.0 Objectives**

#### **1.9.1 Introduction**

#### **1.9.2 Call Number**

#### **1.9.3 Sections of Call Number**

##### **1.9.3.1 Class Number**

##### **1.9.3.2 Book Number**

##### **1.9.3.3 Collection Number**

#### **1.9.4 Suggested Readings**

#### **1.9.0 Objectives**

After reading this lesson you will be able to understand the concept of Call Number, Class Number, Book Number and Collection Number. whole classification process depends upon these concepts.

#### **1.9.1 Introduction**

There is need to make the library processes mechanical, so that books can easily be arranged on shelves as well as kept back after removed from their permanent assigned place on shelves without much difficulty. So Call Number is essential tool for this purpose.

#### **1.9.2 Call Number**

The Call Number denotes the exact relative position of a book in the library. Books and other documents are placed in a library in some helpful order. The Call Number is used by the users to call a book.

Call number has been defined in DDC as a set of letters, numerals and or other symbols providing complete identification of an individual work and its relative location consisting of class and book number and some times other data such as date, volume number, code number, location, symbol etc.

In a scheme like CC, the Call Number of a book individualizes it. Dr. Ranganathan defines the Call Number from two different view points : functionally and structurally. From the functional view point Call Number is defined as the number denoting the position of a document in a library relative to other documents and the position of its entry in catalogue. Structurally it

has been defined as consisting of three parts (a) Class Number (b) Book Number and (c) Collection Number.

### **1.9.3. Sections of Call Number**

As discussed above Call Number consists of the following three parts

1. Class Number
2. Book Number
3. Collection Number

We shall discuss these parts in detail in the following pages :

#### **1.9.3.1. Class Number**

Class number represents the thought content or the subject matter discussed in a particular book.

Class number has been defined as “the ordinal number representing a class in a scheme for classification” (Prolegomena CM 33, p. 72) DDC defines it as ‘that portion of call number which designates the class of a given work (Glossary, p. 58).

Class number is the end product of classification which has been defined in DDC glossary as “(1) An arrangement in some logical order of the whole field of knowledge, or some specified portion thereof. (2) The art of arranging books on other subjects in conformity with such a scheme.”. (p. 58).

Prolegomena defines classifying, the process of classification as follows

#### **Classifying the entities of a universe ordinarily implies**

1. The existence of a scheme for classification applicable to the universe.
2. The implicit or explicit indication of the associated succession of characteristics;
3. The adoption of a scheme for classification;
4. The assignment of each entity to the appropriate class of the scheme for classification by ascertaining the way in which each of the characteristics of the scheme is shared by it;
5. The assignment of the appropriate class number to each entry;
6. The creation of a new class, when necessary in accordance with the proscribed postulates and principles”. (*Chap. C.O., 79*).

#### **1.9.3.2. Book Number**

When the specific subject of a book is classified we get a class number. It is the Number representing the ultimate class of the subject of the book. All books on an ultimate subject will have the same classification number. The books on an ultimate subject will have the same classification number. The book will require to be individualized, i.e. given a distinctive identity. This is

done with the aid of the scheme for book numbers. The scheme for book numbers classified or individualized book in the same ultimate subject by a characteristics other than subject. Two characteristics can be used to classify or divide books in the same ultimate subject. They are (i) Name of the author of the book (ii) Year of publication of the book.

**Author's Name** Author's name may be used to construct book numbers in two different ways:

- (i) By using the first three letters of the name of the author e.g. Bro for Brown, Jos for Joshi, etc.
- (ii) By translating the name of the author into numbers. Four different schemes are available for construction of book numbers. These are:
  - (i) Merrill Book Numbers.
  - (ii) Jast Book Numbers.
  - (iii) Brown Book Numbers.
  - (iv) Cutter-Sanborn Author Tables.

### **Year of Publication**

In some schemes of library classification year of publication of the books is used for construction of book numbers. One such scheme I called as scheme of Bisoc Book Numbers or Bisoc Date Tables.

In the Colon Classification system year of publication is used for individualization of books in the same ultimate class. The Colon Classification has developed a Facet Formula for construction of Book numbers. The facet Formula is as follows

### **Facet Formula Book Numbers**

(L) (F) (Y) (SN) (V) – (S) : (C) : (EVN)

(L) stands for language (language number).

Language number is taken from Chapter 5 of the Schedule. It is omitted if the book is in the favoured language of the library i.e. in the language in which the library has the largest number of books.

(F) Stands for Form. A Form Schedule is given in Chapter 02 of Part 2.

(Y) Stands for year of Publication. Year number can be taken from the Time Schedule given in Chapter 3 of the special Schedule, provided in Chapter 03 of Part I.

(SN) is serial number. If more than one book has the same language form and year numbers, then digits 1,2,3 etc. are added to the year numbers of the books received subsequently.

(V) Stands for volume number of the book.

(S) Stands for supplement number of the book.

(C) is copy number of the book. The second and subsequent copies of the book are assigned number, 1, 2, 3, etc. in the order in which the copies are received in the library.

(EVN) is evaluation number. In the CC ed.6 (EVN)s facet was called Criticism Number: g is used for EVN.

We give below a few examples of book number according to colon classification.

### **Book Number**

A book published in 1974 (in favoured language)	“will be N74 or L4
Punjabi book published in 1974 (Punjabi is not a favoured language)	153 N74 or 153 L4
Second value of book published in 1974 In the favoured language.	N74.2 or L4.2
First supplement of the book published in 1974	N74-1 or L4-1
Second copy of the book published in 1974	N74; 1 or L4; 1
For a second book in the subject having The same year	N741 or L4 1
For a third book having the same year	N 742 or L42

### **1.9.3.3. Collection Number**

In a library documents or books are grouped either on the basis of their physical features, their variety or their importance to specific group of users. To facilitate such groupings, a number called Collection Number is put on the documents or books.

Collection number is a mark added with the class number and the book number for a book to indicate the collection to which the book belongs. The following type of collections may be found in libraries.

#### **(i) By Types of Materials**

- Film rolls.
- Film strips.
- Micro-Cards.
- Transport Cards.
- Ceiling books
- Gramophone record.
- Specking Books or Cassette tapes.
- Braille books.

#### **(ii) By Size of rarity**

- Pamphlets.
- Giant Folios.

Miniature books.  
 Rolls.  
 Books containing plates.  
 Worn out books.  
 Rare and Costly books.  
 Incunabula  
 Manuscripts

**(iii) By Types of Users**

Reading Room Collection  
 Text-Book Collection  
 Departmental Collection  
 Topical Collection

Dr. Ranganathan has given the following illustrative schedule for few of the collections :-

Under sized Books	Underline the book numbers.
Oversized Book	Overline the book numbes.
Art Books and other	Underline and overline the
Delicate Books	book number
Worn out books	Encircle the Book numbers.
Rare Books	RB
Reading Room Collection	RR
Text Book Collection	TC
Film Strip Collection	FS
Law Department Collection	ZD

There are two methods of writing the call numbers:

- 1. Horizontally :** Sufficient space should be left between each component when written in horizontal straight line e.g.

K            L 5            TC

- 2. Vertically :** in vertically line the three components should be written on upon the other in the different lines as follows

TC  
 K  
 L5

**1.9.4 Suggested Readings :**

- 1 Ranganathan (SR) : Prolegomena to Library Classification, Ed. 3 Part U & V.
- 2 Ranganathan (SR) : Colon Classification, Ed. 6 Chapters 2 and 3.
- 3 Kaula (PN) : Treatise on Colon Classification.

- 4 Krishan Kumar : Theory of Colon Classification, 4th ed. ND; Vikas. 2006.  
5 Satija (MP) : Book Numbers : Some Indian Methods 2006.