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1. Introduction

Dr. S.R. Ranganathan (1892-1972), father of the Indian library movement, was the most prolific and innovative library science author of his time. His exemplary dedication and uncanny insights won him the respect and admiration of his countrymen and peers the world over. His testament forms the bedrock of the current theory of the discipline. Extensive work on classification that he did is epoch-making, and created a paradigm next in importance only to Melvil Dewey's pioneering work. His theories still constitute the core of our current knowledge of the subject.

2. A Brief History of the CC

The Colon Classification, conceived and developed from 1924 to 1928, was first published by the Madras Library Association in 1933. The latest and the first edition published after the death of Ranganathan was the 7th in 1987.

Being a mathematician and a close student of an inspiring teacher W C B Sayers (1881-1960) in the School of Librarianship and Archives, University College, London, classification studies attracted him most. In his later work he perceived many similarities between classification and mathematics. At the same time practical classification by the DDC did not satisfy his orderly mind. That being a mark and park system, he could assign more than one class number to a document — especially

enshrining compound and complex subjects. This defeated the purpose of classification itself. Besides this, Ranganathan also found only a nominal representation of non-western subjects in the scheme. WASPISH bias in Dewey's system is too well known, even today. But he appreciated the genius of Dewey in devising a modern classification scheme.

2.1 Genesis

He diagnosed that the DDC due to its enumerative nature was a classification suited to the 19th century literature. Knowing the malady treatment could not have been far away. In 1924 Ranganathan happened to visit Selfridge's departmental store in London, and keenly watched a demonstration of a Meccano toy kit. The salesman was making different toys from the same kit by permutation of the blocks, strips, nuts and bolts. That triggered his mind to adapt similar technique to design different class numbers from same subject concepts to suit the individual documents. And that idea clicked which later brought a paradigm shift in classification theory, practice and research. He visualized that all knowledge is comprised of some basic and discrete concepts, which could be combined to construct class number to specifically suit a particular document, instead of assigning it a predetermined readymade Pigeon Hole. Connecting symbols in the form of punctuation marks served his nuts and bolts. Back home in 1925, as the first trained librarian of the Madras University, he applied his scheme to the library, and gained long experience of its development and feedback of its application. It was first published in 1933 by the Madras Library Association (founded in 1928) of which Ranganathan was the founder General Secretary. Second edition published in 1939 was important as it clearly laid down the theory and methods of CC as already published in his magnum opus, the *Prolegomena to Library Classification* (1937). Third edition came out in 1950 when he had migrated to Delhi University and was in the second phase of his writing career. In Delhi he attached a band of young and faithful librarians who considerably furthered research in classification. It was widely adopted in Delhi libraries. It led him to delve at somewhat more abstract level of his classification theory. After a long experience and constant quest to generalize the various facets, Ranganathan in 1952 came out with his famous but debatable theory of -Five and only five fundamental categories in the universe of knowledge. In the earlier editions the facets were named variously in different main classes. In the fourth edition these were named as Personality, Matter, Energy, Space and Time, well known as PMEST. Nevertheless, it was a masterstroke in generalization of facets, and is considered as the least number of categories for any bibliographic classification, so far. The fifth edition (1957) was proposed in two volumes of basic and depth versions, but only basic version was published. By the time sixth edition in 1960 was published the CC had reached its pinnacle of glory brought by the international conference on

classification study and research at Dorking, England in 1957. The Classification Research Group (CRG, London formed in 1952) declared its manifesto of faceted classification as the basis of all future information retrieval systems. Philosophy and method of facet analysis got wide acceptance, though only a few believed the doctrine of –Five and only five fundamental categories. The term facet was used differently by different scholars and classification schemes. Sixth edition (1960), later issued with amendments(1963), remains most popular, used and stable edition. It is the one taught in all Indian library schools. The 7th edition published after the death of Ranganathan in 1987, edited by his long time research assistant Professor M A Gopinath (1940-2013), was found confusing and inconsistent in structure and operation. Nevertheless, it brought many metamorphic changes in basic subjects, categories, common isolates and notation.

Versions

Historically all the seven editions (1933/1987) can be divided into three versions in the line of evolution.

Version 1(1933-1950): Rigidly faceted era. During this period the facet formula was rigid and pre-determined. Colon was the only connecting symbol for all the facets. That is until the fourth edition(1952) only connecting symbol was the colon; even the absent facets had to be indicated by the dummy colons, e.g., 2:::N Libraries in 20th century. Here the first two colons indicate the absence of matter and space facets, the third is the connecting symbol for the Time facet, i.e. 20th Century. It made the class numbers unwieldy, and even slippery. An extra colon could land the book in alien areas.

Version 2 (1950-1963): Analytico-Synthetic era. As said earlier, the fourth edition became a milestone with the postulation of the five fundamental categories and generalizing them so concretely as PMEST. Each category was indicated by a distinct connecting symbol. Hence the absence or presence of any category was self or automatically indicated. For example, the above class number was denoted as 2’N, ’ apostrophe being the indicator digit for Time. It means all other categories, namely, P, M,E and S are absent. It brought simplicity and brevity in notation.

Version Three (1963-1987): Freely faceted era. This period was devoted to the close study of the properties and structure of the universe of knowledge. Splitting the Matter category into three kinds, discovery of new facets, many new categories of common isolates, concept of spectators, and development of hospitable notation led to declare it

as a freely-faceted analytico-synthetic scheme, which is a sort of a self-perpetuating scheme. A self-perpetuating system is one which needs least revision. The new version has a virtually infinite capacity to incorporate new subjects at their proper places with the help of hospitality devices for creation of new isolate numbers. The CC is a truly analytico-synthetic classification as well as a highly faceted classification. But history has proved that no classification can be self-perpetuating. It badly needs revision and updating.

3. Features of the Colon Classification

The CC is a general scheme, which aims to classify by discipline all subjects and all kinds of documents—books, periodicals, reports, pamphlets, microforms and electronic media in all kinds of libraries. For bibliographic records, requiring depth classification, and for information retrieval both in manual and electronic systems, it is especially suitable. Scheme is described as analytico-synthetic which implies that it does not go in for making any exhaustive list of all possible subjects known at a time, as was usually done in those days. It is based entirely on objectively formulated but dynamic theory in his *Prolegomena* (1937/1957/1967). For designing a classification system Ranganathan divided the work into three successive planes. Idea plane is the message, Verbal is expression; Notational plane is representation.

Three Planes of Work

Prior to Ranganathan classification design was considered as an intuitive work of a few inspired geniuses. The first edition of the CC was mostly based on intuition, and elusive principles. But Ranganathan soon crystallized the unconscious theory that went into making of his CC from 1928 to 1933. The theory was precipitated in his *magnum opus Prolegomena to Library Classification* (Madras Library Association, 1937). Through comparative approach it formulated some canons and postulates for designing and evaluating classification systems. In 1950 a great breakthrough was achieved in the design of classification by dividing it in three succeeding phases, called three Planes: Idea plane, Verbal plane and National plane. Guided by the overarching Five Laws of Library Science, the work in each plane is executed by 55 Canons, 22 Principles and 13 Postulates—Ranganathan makes clear distinctions between these terms. In addition there are ten Devices to improvise notations for non-existing concepts in the schedules.

Idea Plane

It is a thinking, policy and decision making phase. It is the brain work of the entire work. Here the blue print of the scheme is prepared. Here entire theory is thrashed and is made intellectual analysis of the subject; characteristics are selected to break a subject into facets and ultimately into isolates arranged discretely and systematically into arrays and chains. An *isolate* is the smallest unit of knowledge in the CC; whereas a *facet* is a group of isolates obtained by the application of a single characteristic. The

type and quality of characteristics of division , and the order in which these are to be applied is determined the by Canons of Characteristics. These canons lay down that that characteristic chosen as the basis of division should be concrete, relevant, objective, and permanent; characteristics should be applied in order of general to specific and one at a time.

Arrays & Chains:

Once facets and their isolates are formed with the application of characteristics, the next set of canons is to arrange terms in arrays and chains. An array is a set of entities of equal rank arranged in a systematic order. For this, Ranganathan formulated rules for formation of arrays of facets. These are: Canon of Exhaustiveness that is an array should be inclusive of all the classes. Nothing should be left out. Canon of Exclusiveness lays down that an entity should belong to one and only one array—it will avoid cross classification. But in online classification this canon is of no use. Helpful sequence canon means that facets and isolates should be arranged in a predetermined logical sequence but one which is expected by the majority of the users. Historical events should be chronological, while UN member states can be in alphabetical order; living species may be arrayed in the order of their evolution; chemical elements can be arranged by their atomic numbers. He discovered eight options to arrange entities in a helpful order. Chain is a sequence of entities in a constantly decreasing order of their extension. World--Asia--South Asia--India--North India--Delhi is a chain of classes. The Canon of Decreasing Extension means chain should move from broader to narrower, or general to specific classes; and Canon of Modulation means no link in the chain should be missed. In the above chain we should not jump from India to Delhi omitting North India.

Verbal Plane

The verbal plane gives standard technical names in an unambiguous language to the concepts arranged in arrays and chains in the idea plane. Ranganathan always exhorted librarians to learn and use technical terminology. His canons for the Verbal Plane lay down that terms used to express a science should be free from homonyms and synonyms There should one to one correspondence in concept-term relations. The terms used for classification systems should be made free of homonyms and synonyms, and must be expressed and read in their context; and mostly should be neutral not opinionated or critical. Latter means, terms should not be value ridden. As an example, classification systems should not use the terms major/ minor authors to categorize them, as Dewey did in his 14th edition.

Notational Plane

Ranganathan expected much from a notational system in terms of capacity and sophistication to represent complex ideas. He wanted that notation should faithfully and comprehensively translate the subject of a document in a language of ordinal digits.

He overloaded it with important work but relegated it as servant of the idea plane. However, his canons of notation lays down that notation in a class number should be brief, simple easy to write, remember (for a short time) and pronounce. It should be expressive of subject structure, and above all it should be hospitable to the new subjects. Later quality in Raganathan's notations is in abundance Considered a high water mark in the development of library classification notations, his notation is mixed, uses decimal and group notation. It is hierarchical, extremely hospitable which transparently depicts the facets and categories. Above all his notation is highly mnemonical even up to the seminal level – i.e., unity, God, world are always denoted by 1; diseases and mechanical breakdown will get the same number, so will do cures and repairs in different main classes where as G; 3, I; 3,K; 3, and L; 3 represent general, plant, animal and human physiology, respectively. Ultimately it is frighteningly complex and much advance of its time.

4. Notation

The notation in the CC-7 comprising of 74 digits (60 semantic and 14 indicator digits) has been divided into the following six species:

- | | |
|--|----|
| 1. A/Z (Roman capitals) | 26 |
| 2. Δ (Greek Delta) | 01 |
| 3. 0/9 Indo-Arabic numerals | 10 |
| 4. a/z Roman smalls(i,l,o excluded) | 23 |
| 5. Indicator digits with anteriorising value | 03 |

* “ ←

6. Ordinary indicator digits

&'. : ; , - = → + ()

11= 74

(Asterisk, double inverted, comma, backward arrow, ampersand, inverted comma, dot, colon, semi colon, comma, hyphen, equal to, forward arrow, plus and parenthesis respectively)

The notational base of the CC is the widest ever in any classification system. On this count, the CC-7 is very hospitable, though it has made the notation and consequently the system quite complicated.

5. Division of Knowledge in the CC

The Colon Classification presumes the unity of entire knowledge. All knowledge is one he learnt from the Vedas (1500 BC.).The structure that ultimately emerges from the CC is both traditional and revolutionary at once. The fact that Ranganathan recognizes and honours the existence of time-honoured main and canonical classes, makes his

scheme steeped in disciplinary tradition. Ranganathan identified three types of subjects in the universe of knowledge: **1) Basic, 2) Compound, 3) Complex.**

Basic subjects are unitary subjects, such as Physics, Economics, Music, Law and Library Science. Compound subjects are basic subjects with subdivisions or additional facets, e.g., Velocity of light, Transport economics, Guitar music, or Law of marriage, and Libraries in India. Compound subjects are virtually infinite in number. *Complex subjects are mostly* interdisciplinary in nature, e.g., mathematics for engineers, Russian for librarians or Comparative physiology. Technically these are two phased subjects

Basic Concepts:

Ranganathan postulated that every subject, be it of any type or level, has a basic subject which forms the first facet in constructing a class number. Ranganathan further divided basic subjects into:

Main basic subjects

Non-Main Basic subjects

And further divided them into ten species. On the basis of their modes of formation the following ten types of basic subjects have been identified.

1. Main Basic Subjects

Traditional (Law, Physics)

Newly emerging (Library & Inf. Sc.)
economy)

Fused (Biotechnology)

Distilled (Research methodology)
(Gerontology, Medicine)

Subject bundles (Ocean sciences)

1.6 Agglomerates (Social sciences)

2. Non-Main basic Subjects

2.1 Canonical classes (Algebra, Geometry)

2.2 System constituents (Marxian

2.3 Environment constituents (Desert farming)

2.4 Special constituents

Complex Subjects

A complex subject is a two phased subject depicting mostly interdisciplinary relations. Six types of phase relations have been identified:

Type	Indicator Digits	Example	Class number

1. General phase	a	Relation of Political Science with History	W &aV
2. Bias phase	b	Psychology for Doctors	S &b L
3. Comparison phase	c	Physics compared with Chemistry	C & c E
4. Difference phase	d	Difference between Christianity and Islam	Q, 6 & d7
5. Tool phase	e	Mathematical Physics	C & e B
6. Influencing phase	g	Influence of Mahatma Gandhi on Barack Obama	V, 73 "w N61&g z G

These relations can occur at three levels, namely: between two main classes for interdisciplinary subjects(e.g., Chemistry and Physics), between two facets of the same category (e.g.Islam and Hinduism) (intra facet relationships), and between two isolates of the same array within a facet (Catholics and Protestants), (intra-array relationships). Therefore, there are $6 \times 3 = 18$ phase relations in all. The number of relations does not seem comprehensive, but it should be noted that phase relations supplement other relationships depicted through PMEST --- which construct compound subjects. The general phase relation comprehends any relationship not expressed through the other five, while other relations are obvious. Definitive rules for primary and secondary phases and constructing their class numbers ensure the expression of the relationships in a precise and consistent way. Ampersand "&" is the indicator digit for phase relation, while each type of relation has its own indicator digit a/g.

Main Classes and their Order

Ranganathan laid much emphasis on the order of knowledge and consequently on the arrangement of basic subjects in his CC. For him the essence of library classification lay in a helpful sequence of subjects and documents. A Classification must depict the structure of knowledge. First division of knowledge in the CC is into traditional

disciplines, which he arranges in the order of their evolution as academic studies, namely:

Science and Technology

Humanities

Social Sciences

The social sciences are the most recent academic disciplines to emerge; science and technology, however, were studies (of curiosity) of even primitive humans.

Now the disciplines are divided into sub disciplines, namely,

B*Z Physical Sciences

G*Z Bio Sciences

K*Z Animal Sciences

L*Z Medical Sciences

MZ*Z Humanities and social sciences

S*Z Behavioral Sciences

T*Z Social Sciences

Within each discipline the CC has an order of main classes meticulously based on objectively stated principles .An overview of main classes in the CC is follow:

Science & Technology

A/B Science/ Mathematics

C/D Physics/Engineering

E/F Chemistry/ Chemical technology

G/H Biology/ Geology

I/J/ K Botany/Agriculture/ Zoology

L Medicine

M Useful Arts

Humanities

Δ Spiritual experience & Mysticism

N Fine arts

O/P Literature/Language

Q/R/S Religion/Philosophy/ Psychology

Social sciences

T Education
 U/V Geography/History
 W/X Political Science/Economics
 Y/Z Sociology/Law

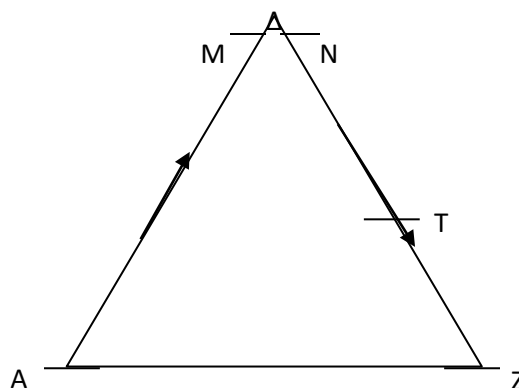
Order of Main Classes

These main classes are in fact preceded by Generalalia and Form classes a/z, and newly emerging classes 1/9, e.g.

a	Bibliography	1	Universe of knowledge
k	General encyclopedias	2	Library science
m	General periodicals	3	Book science
p	Conference proceedings	4	Mass communication
w	Biographies	8.	Management science
z	Generalia classes		

Sciences (including technologies), in classes A to M, have been arranged in order of their increasing concreteness: B, Mathematics, is the most abstract of the sciences, while M, Useful arts (which includes crafts and applied technologies) is the most concrete in the group. Within A/M, theory and practice alternate: theory always preceding practice or its applications. For example, B, Mathematics, precedes C, Physics, which in turn precedes D, Engineering. E, Chemistry precedes F, Chemical technology. Similarly I, Botany is followed by J, Agriculture. This internal arrangement is based on the principle of dependency, first promulgated by Auguste Comte (1798-1857). Unlike Dewey, Ranganathan preferred to collocate the theory with the practice of a subject. Indeed the Library of Congress Classification(1899/1940+) followed this principle earlier to him. In the humanities, which are spread over main classes N to S, the arrangement is in order of increasing richness of subject contents. The order of social sciences, in main classes T to Z, is of increasing artificiality of their laws: Z Laws being legislative and subject to frequent modifications are considered most artificial of the social laws.

One may fault this arrangement. For example, economic and social laws are not artificial, but are based on human nature and thus should not come so far down in the order of classes.



Ranganathan subsequently added the main class Δ , Spiritual experience and mysticism, positioned between the sciences on the one hand and the humanities and social sciences on the other. Δ is at the confluence of two different streams of knowledge, the sciences and the humanities, the two different cultures of C. P. Snow(1905-80). Ranganathan treats spiritual experience as the fountain head of all knowledge, thus refuting Snow's theory.

Ranganathan based his order on concrete and objectively stated principles. These principles are helpful in placing ever emerging new main classes at their logical places in the array of main classes. Number of basic subjects has increased to about 800 in the CC- 7 without any problem of placing them at their rightful place in the lengthy array of basic subjects.

6. Facet Analysis

Facet analysis as developed by Ranganathan is the core of the CC philosophy and methods. It has revolutionized classification theory and practice. No class number for compound or complex subjects is available readymade. Every class number to be synthesized.

Eight Steps for Practical classification

Ranganathan has given eight patent steps to turn a raw title (as it appears on the document) into a class number based on the subject contents. First of all specific subject of a document has to be determined for which there are no specific rules. Ranganathan calls it intuitive or trail and error act. It indeed requires flair. Nevertheless, a specific subject is to be determined from the title, subtitle, preface, table of contents, or even by reading the text. The raw title may be augmented by key words or phrases , if necessary, to fully indicate the subject of the document. Next we separate the subject proper from the common isolates –which represent the tangible elements of the document or viewpoint of the author. Then in the process is determined the main class, in which the specific subject falls. Main classes and other basic classes are postulated by the system—these are the givens. Then starts the facet analysis into PMEST categories. Ranganathan has suggested identification of categories in a subject in the order from [T] to [P], moving from facile entity to the most elusive one.

Identification of Fundamental Categories

Categories tend to evade definitions. Their nature is somewhat elusive. These are still postulated and require much experience to recognize them. For example, the category Personality occurs in all the main classes, yet it is difficult to say what generally it is. Nature of categories varies from main class to main class. Their deceptive nature is clear from the fact that what had been the Energy category in editions 4 to 6 has become all of a sudden Matter in the 7th edition. At times it is confusing to categorize an entity clearly. Therefore, if something puzzles us, the only solace seems to acquiesce the way desired by Ranganathan.

In practical classification we start with identifying [T] and come down to [P] via [S][E][M]. Time indicated by apostrophe, is chronological, diurnal or seasonal. For example, 20th century, medieval period, summer season. Space indicated by a dot is manifestation of geographical and political areas or population clusters. For example, London, French speaking countries, NATO, Hilly areas, Iberian Peninsula, or Colorado valley. Energy, indicated by a colon, manifests action, activities and problems. For example, harvesting, treatment, storage, diseases, teaching, management, etc are instances of Energy. Earlier [M] was confined to material of the entity, as wooden chairs, marble sculpture gold coins. In the latest edition Ranganathan has widened its scope by recognizing three variants of this category:

1. Matter-Property [M-P]
2. Matter-Method [M-M]
3. Matter-Material [M-Mt]

For all three of them the indicator digits is “;” semicolon. Of all the fundamental categories Personality [P] is most concrete but paradoxically most difficult to be recognized. Like human personality it is a complex entity and thus elusive something. Ranganathan recommended Residual Method to spot it in a subject. It means that after identifying [T], [S],[E] and [M], if any thing still remains in the residue, then it might be personality – as a corollary of the of “five and only five fundamental categories”. Personality incarnates itself in persons (individuals or groups) communities, institutions, animals and plants families, body organs, chemical elements , agricultural produce languages, religions, art styles languages,` and the like. Residual method makes the process bit intuitive and flexible and thus widens the scope of the category personality. It is indicated by a comma.

Rounds and Levels

Recurrence of a category in more than one facet is accounted for by the postulate of rounds and levels. For example, in class O, Literature, the category [P] personality occurs four times (Language, Form, Author, and Work), each at a different level. In the subject, Treatment of human diseases, both Diseases and Treatment were manifestations of the first and second round of energy, respectively in the sixth edition. The phenomenon of the recurrence of categories is tackled by the Postulate of Rounds and Levels: Ranganathan postulated that space and time occur in the last round of the facet formula. Categories [P], [M], and [E] can occur in various rounds and at various levels within a round except [E] which has only rounds and no level; energy always completes a round.

6.3.1 Facet formula: Citation order

Facet formula depicts syntactical relations among facets. To mechanize the arrangement of categories and their scattered facets, Ranganathan after a long trial, finally settled on a general and all encompassing facet formula, popularly known as PMEST (Personality/Matter/Energy/Space/Time). Rounds of categories are arranged by the Principle of dependency, which Ranganathan formulated as the **Wall-Picture principle**. Since there cannot be any mural without a wall, so the wall is made the first facet. The master Wall-Picture principle has various corollaries formulated in such axiomatically worded principles as the **Whole-Organ principle** (whole-part relationship) and the **Cow-Calf principle** (principle of appurtenance) to arrange levels of facets; the more complex **Actand-Action-Actor- Tool principle** is obtained by logical mix of the above principles. It may be noted that this citation order is in tune with the latest CRG facets order:

Things—Kinds—Parts—Materials—Properties—Processes—Operations--Agents

In the sequence, the basic facet -usually represented by main class-- or its amplification by system (Sm), environment (Env), or specialization (Sp), precedes other facets. The grand general facet formula may be represented as follows (numbers preceding a category indicate its round, while subscripted numbers following a category indicate its level):

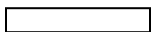
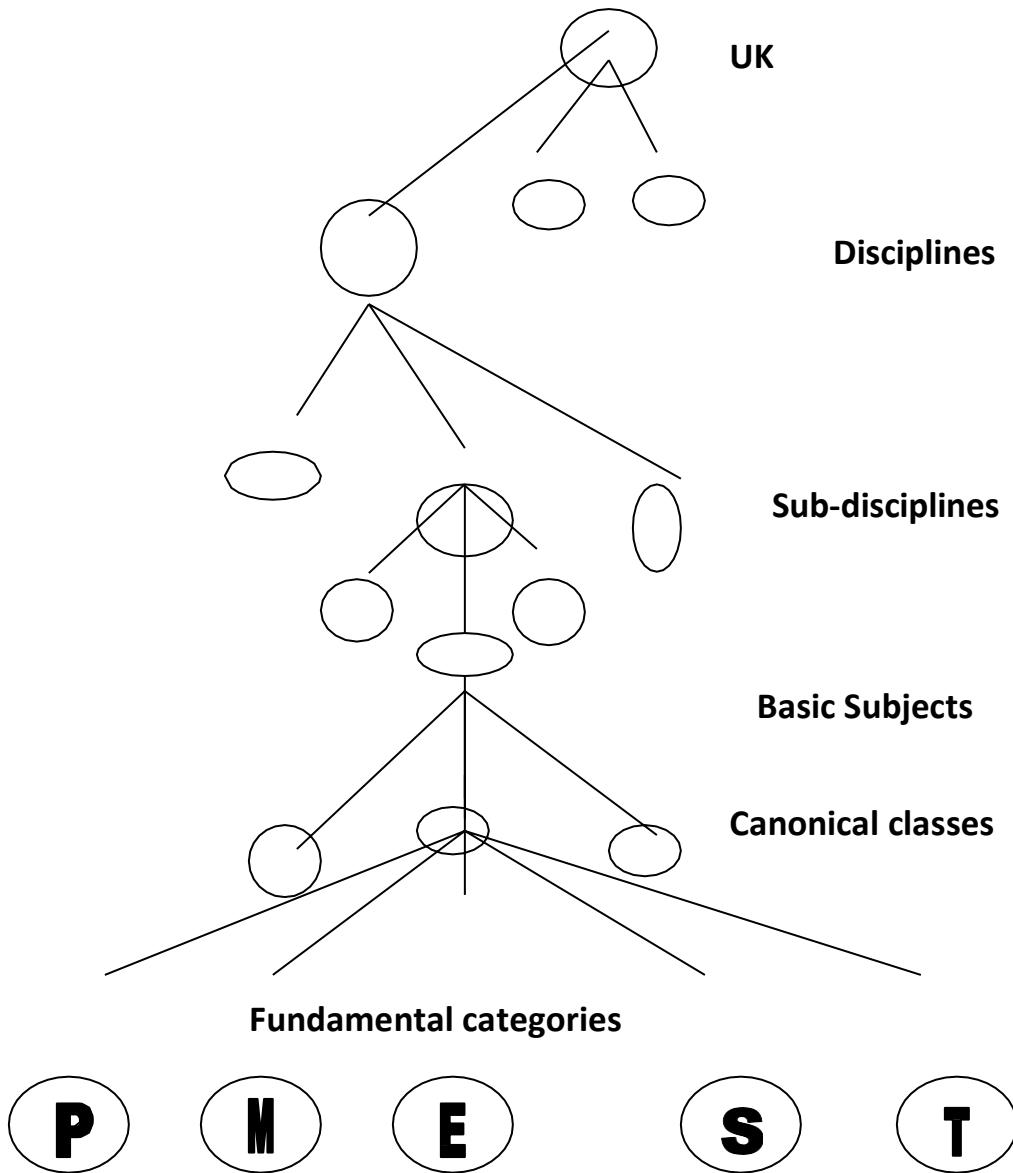
(BF), [1P1], [1P2],[1P3], [1P4]; [1M1]; [1M2]; [1M3]: [E], [2P1], [2P2];[2M1]; [2E+,*3P1+...:*3E+. *S1+.*S2+*T1+*T2+

In the CC-7, the total number of facets and their general sequence is as follows:

- Field of study → System → Environment → Specials → Object of study →
Kinds/Parts of Objects → Properties of object → Action on the object → Kind of

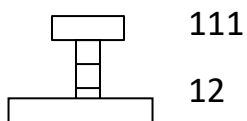
action - Method of action → Agent of action → Instrument of action → Space →
 Space qualifier → Time → Time qualifier.

Division of the Universe of Knowledge (UK)



1

11

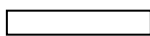


121

122

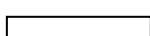
123

2



3

1,2,3,4 Form an Array



4

1,11,111 Form a Chain

7. Synthesis:

Analysis is followed by Synthesis of facets. In a document first subject *per se* is to be separated from common isolates denoted by roman smalls and added after the subject facets. with their own indicator digit. These are the two types:

Anteriorising common isolates, e.g.,

a bibliography

r administration report

k Encyclopedia

s statistics

m periodical

t commission report

x collected works

These are added with the Connecting symbol double inverted comma, and bring the documents to its anterior position. Posteriorising common isolates are three types: Personality, Matter-Property, and Energy.

b14 calculation

aTc critical study

t educational /research institution or learned socials .

These are added with their respective indicator digit comma, semi colon and colon respectively and take the document to a backward position:

2;5 'P'a Bibliography of 21st Century Classification

2" k73, N9 Encyclopedia of Library & Information Science(USA)

2.44, g, N3 Indian Library Association(Estt.1930s)

2, J1*Z. 73: aT Assessment of US academic libraries

E*Z: aR Research in Chemical Sciences

Y; aa Theory of Sociology

Class numbers look lengthy like algebraic equations, even unwieldy and surrealistic. Savior a few:

20th Century Bibliography of Merchant of Venice by Shakespeare

O, 111, 2J64m, M+V" aN

Homeopathy for Heart Diseases of Old People Living in High Altitudes

L-L-9Un4-9F, 32; 4:6.

A History of the Association of Commonwealth Universities

T, 18.1=CN48, g, 9N" v

US Armament Policy towards Pakistan

V, 73; 1844X=M1

India's Foreign Policy toward Muslim Countries

V, 44; 181= (Q, 7)

Sociological abstracts

Y" a" m73, N

Ranganathan sacrificed the brevity and simplicity of notation to make the notation extremely hospitable, and to produce finely expressive and totally co-extensive class numbers. Most of the classifiers are afraid of its notation, which makes the system unpopular.

8. Principle of Inversion

The CC follows the Principle of Inversion first used by the Universal Decimal Classification (UDC). In the PMEST citation order categories are arranged in order of decreasing concreteness: [P] Personality is the most concrete and [T] Time the most abstract; [E] Energy lies midway being as concrete as it is abstract. On the shelves or in

a classified database, however, the order of subjects is from general to specific, that is, from abstract to concrete. This order is achieved by ingeniously fixing the ordinal value of indicator digits, e.g., ordinal value of the indicator digit for [T] is less than that of [S], and so on.

8.1 Apupa Pattern

Within a given specific class the CC arranges documents on the shelves in what is termed as the APUPA pattern. The letters of the acronym stand for different pockets of documents in a given and related class: A is an Alien (or related) subject zone; P is a Penumbral region; U is the Umbral region, having core documents on the subjects. The general APUPA pattern is achieved by postulating two kinds of (common isolates): Anteriorizing Common Isolates (ACIs) and Posteriorizing Common Isolates (PCIs). Common isolates are like the standard subdivisions of DDC or common auxiliaries of the UDC which and are attachable to any class, irrespective of its specificity. ACIs are not the subject proper, but form approaches to a subject. They include, for example, bibliographies, synopsis, histories, and glossaries of a subject. ACIs are filed anterior to the subject proper. This forms a penumbral region, having less of the subject proper.

Then follows the proper pure subject and with all its subdivisions. For example, basic and compound subjects could constitute the umbral region in the pattern. This is followed by another penumbral region, formed by fitting documents of the umbral region with PCIs. These are documents about the subject that are best read by advanced students or researchers after the mastery of the core subject. These include educational and research institutes on the subject, critical reviews, and recent advances in the subject. Thus the umbral region is surrounded on both sides by penumbral regions of differing natures, which in turn are flanked by two different alien regions.

The APUPA pattern , unique to the CC, is one of the logical, pedagogically useful and beautiful arrangements of documents on the shelves. It uniformly and constantly weaves a perceptible useful pattern of documents on the shelves or of their surrogates in a bibliography. The arrangement is so impeccable that it is appropriate to say that to browse a CC classified library is itself an education. This has been achieved by investigating deeply the structure of knowledge and arranging its components in a way most useful to the most users.



Apupa on the Shelves

is a continuum from A/Z classes

9. Index

The sixth edition had many subject indexes, but the 7th has none attached to it. Later in 2002 CINDEX a machine readable index to the CC-7 on a CD in Unesco's WINISIS was issued.

10. Revision, Use and Status

Despite being projected as India's national scheme of classification, it is not a widely used system in India. The DDC outranks any other system in popularity. Though no register of its users has been maintained, but according to a very favorable estimate some 24% of the libraries were using this system in India in 1960s. No new library is adopting it. CC class numbers are also given as a bibliographic element in the entries of the Indian National Bibliography. There is no national committee or a substantive institutional backing to advise or to take responsibility of its revision or publication. It is now repeatedly reprinted by a commercial publisher for students.

10.1 Future

The system is based on postulates and principles integrated into a coherent and fully developed theory of classification. For this Ranganathan evolved apt principles and forged precise tools. The theory of the CC is in fact considered as the theory of classification in general which is taught in many library schools the world over. The contribution of the CC lies in its facet analysis technique, the concept of fundamental categories and hordes of practical postulates and hospitality devices. It provides scientific guidelines for construction of any new classification system. Many depth and special classification systems have been designed using the CC methods. It can be used to design other indexing vocabularies such as thesauri, thesauro-facets or depth classifications for micro subjects. Its facet analysis is immensely helpful in query formulation for better recall and precision of output. Some of the search engines or web directories invariably use Ranganathan's approach with good results in retrieving information on the web. Aimee Glassel wonders if Ranganathan anticipated the search engines of the WWW. But survival of the system in its present body seems uncertain due to long neglect. System has not been revised since 1987, even the last revision came a cropper. It was rejected by the profession. Its subject contents are badly dated giving no place to new subjects.

Glossary

APUPA pattern : A pedagogical order of documents on the shelves or entries in a classified catalogue which is logical and helps the learners of the subject. This pattern arranges the documents from general to specific to advanced subjects. It is ingeniously obtained by fixing the ordinal value of common isolates and the indicator digits.

Basic subject: A subject without any isolate idea e.g. Physics, Marxian economics, or Algebra. These are limited in numbers and vary in each classification system. Within each system these may vary from edition to edition.

Category: An umbrella term for the very broad division of knowledge. Ranganathan's postulates all the concepts in the universe of knowledge essentially fall in any of the five fundamental categories. He further believed there are five and only five fundamental categories, denoted by : PMEST, in the universe of knowledge. Many modern library scientists do not believe in this postulate of Five Fundamental Categories. They equate categories with facets, and number of facets is much more in the universe.

Complex subject: A subject comprising of two phases, e.g., Psychology for nurses; Comparative study of Indian and British Constitutions.

Compound subject: A subject comprising of a basic subject and one or more isolate ideas, e.g. Agriculture of wheat, Library science in India in the 21st century. Their number in the universe of knowledge is almost infinite.

Discipline: The first order division of the knowledge into organized and coherent chunks of knowledge for convenience of study and organizing knowledge. The three primitive disciplines are natural sciences, social sciences, and humanities.

Facets: Totality of isolates obtained by applying a single characteristic of division on a subject. In the CC, a category is further divided into facets.

Facet analysis: Act of assigning terms/concepts in a subject to already recognized categories and facets.

Facet formula: A generalized citation order of categories and facets which holds true across the main classes. It shows syntactic relations. In the CC, it is famous and PMEST order.

Isolate: A smallest unit of knowledge in the CC which cannot be further subdivided.

Planes of work (Three): Division of the work in designing classification systems into three distinct but consecutive and accumulative phases namely, Idea plane, Verbal plane and Notational plane.

WASPISH bias: Favor to and preponderance of Western, Anglo-Saxon and Protestant subjects to the neglect of Asian and African subjects in the DDC.

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