CHOICE OF SCHEME FOR CLASSIFICATION

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Rasmus Molgaard-Hansen's paper UDC, DC, and LC in competition on the domain of the university library has been the stimulus. (See also Sec 96 for comments on Perrault's paper). After the definition of essential terms, CC, DC, LC, and UDC are compared in respect of the following points:

1. Faith in one scheme for shelf arrangement of books and for documentation lists;
2. Sequence of the main subjects according to the consensus of scholars and scientists;
3. Sequence of compound subjects;
4. Extent of facetisation;
5. Verbal, idea, and notational planes;
6. Use of crisp words in schedules, so as to be fit for use in subject headings;
7. Guiding principles for the idea plane;
8. Obligation of notational plane to implement the findings in the idea plane;
9. Fault of "Starvation System";
10. Versatility of the notational system;
11. Fault of alternative places for a subject;
12. Uniqueness of class number, assuming help from the catalogue and administration to meet the needs of minorities;
13. Value of freely faceted classification guided by principles;
14. Helpful places for newly emerging subjects;
15. Systematic procedure for classification; and
16. Organisation for future development.

ABBREVIATIONS USED:

BC = Bibliographic Classification of Bliss
CC = Colon Classification of Ranganathan
DC = Decimal Classification of Dewey
EC = Expansive Classification of Cutter
LC = Library of Congress Classification
UDC = Universal Decimal Classification

Note: The reference numbers given within circular brackets in the text are of two kinds:

* Based on Library Science with a slant to Documentation, Vol. 5 (1), March 1968, p1-69. Paper A.

1. A mere Indo-Arabic numeral denotes the serial number of the reference in the bibliography given at the end of the paper; and

2. The word 'Para' followed by an Indo-Arabic numeral within circular brackets denotes the number of the paragraph of Molgaard-Hansen's paper forming the basis of this paper and appearing as serial number 23 in the bibliography at the end of the paper.

0 INTRODUCTION

01 Genesis

This paper has been prompted by a communication received on 12 JUNE 1967 from RASMUS MOLGAARD-HANSEN, Chairman of the FID/CR.

02 Method of Choice in a Danish University in 1967

This communication (23) describes the trend of the Proceedings of a Meeting held at Odense on 18 April 1967, and attended by twenty representatives of the Danish University and Specialist Libraries and of the Classification Committee of the Danish Public Library System. The discussion at the Meeting was based on the report made to Torkil Olsen, Chief Librarian of the newly formed University Library at Odense, by the two librarians M Weitemeyer and A Tiedje. These two librarians had never used either DC or LC or UDC. They were asked to examine the result of classifying an assortment of 225 books picked out from the field of humanities and history according to DC, LC, and UDC; and to compare the respective sequences and report their findings on their relative merits. The Meeting considered also a report by K Birket-Smith on the possible adoption of LC by the Odense University Library.

03 Method of Choice in Delhi University in 1943

The method of choosing a Scheme for Classification, described in the preceding section, was not available in India about a generation ago. In 1943, S Das Gupta took charge of the University Library at Delhi. He had to choose a Scheme for Classification. At that time, the library profession had not been well established. The number of professional librarians was very small. Therefore, he used the preference of scholars as the test. He made an assorted collection of books in a subject. He also made a duplicate collection. There were only two schemes to be considered - Colon Classification and Decimal Classification. He classified one of the collections by CC and labelled its book case 'Classification A'; and the second collection by DC and labelled its book case 'Classification B'. Then some of the professors in the subject spent a fairly long time in comparing the relative helpfulness of the two arrangements. Their verdict was unanimously in favour of 'Classification A' - that is, Colon Classification.

Das Gupta wrote to me that he used the names A and B to denote the two schemes for classification for a definite reason. In these early years, which belonged to the British Period, there was inherent preference to anything of foreign origin and an equally inherent prejudice to anything of Indian origin. Further, the few librarians in the country

had cultivated an emotional aversion to Colon Classification, without gaining any experience with it and even without haying read the scheme and the literature which had grown around it. Das Gupta knew this. He knew also that two librarians had been doing some propaganda in the matter. He explained this as the reason for his not disclosing the names of the two schemes to the professors until they made the choice.

1. General

Preliminaries

In any comparison of Schemes for Classification, clarity and consistency will be gained and fault in communication will be minimised, if start is made with

1. Definition of the term 'Classification';
2. Concept of Class Number as a translation of the name of a subject from a natural language to a preferred ordinal language;
3. Making unique the name of a subject in the preferred ordinal language - that is, making its Class Number unique;
4. Providing for the approach of the minority of readers not by changing Class Numbers but by other means; and
5. Purpose to be served by classification.

DEFINITION OF THE TERM 'CLASSIFICATION'

The term 'Classification' should not be taken in the sense of

1 *Either* merely as a division of the Universe of Subjects into near-homogeneous groups of subjects;

2. *Or* merely as division into groups plus arrangement of the groups in a preferred helpful sequence.

The term 'Classification' should be taken to include also the representation of each group of subjects - that is, each subject or each subject-complex of any possible degree of intension - by a unique ordinal number of its own. This is necessary to re-insert, in its correct place, any book taken out of the shelves or any entry taken out of the classified part of the catalogue (44, 47). It is believed that there is no difference of opinion on this today.

Concept of Class Number

The definition of the term 'Classification', given in the preceding section, is equivalent to the concept that Class Number is a unique translation of the name of a subject in a natural language into the preferred Classificatory Language of ordinal numbers. In this view, the system of all the Class Numbers of a Scheme for Classification, taken together, may be deemed to be a Classificatory Language (55). This

concept was not perhaps easily acceptable about 30 years ago. But, Sayers endorsed it (71) and it is believed that it is now widely accepted.

Uniqueness of Class Number

The term 'Uniqueness of Class Number' emphasizes that the preferred Classificatory Language should be homonym-free and synonym-free. In other words, no Class Number can represent more than one subject and no subject can be represented by more than one Class Number (52). To use mathematical terminology there should be a strict one. One correspondence between subjects on the one side and the Class Numbers on the other. Unless there is such a uniqueness, pestering cross classification will arise. Books on one and the same subject will get scattered and mixed up in the sequence. A system of unique Class Numbers and such a system alone can provide a unique sequence of subjects. Of course, care must be taken to see that such a sequence should be the one satisfying the approach of a majority of readers. No doubt, it is not easy to determine such a sequence by direct experience gained by observing the approach of readers' books in all kinds of libraries. Leaving it altogether to conjecture at the level of actual Class Numbers, will lead to great divergence of opinion. The chief contribution of CC is the taking of this problem to the near-seminal level. Its Postulate of the Five Fundamental Categories and of Rounds and Levels of manifestation of each of them in a subject; and the Postulates and Principles for the helpful sequence of the isolates in a facet and of the facets among themselves belong to this near-seminal level. The sequence of facets thus determined is nearly the one determined by Absolute Syntax. This System of Postulates and Principles has given at the phenomenal level a unique sequence of subjects helpful to the majority of readers (34, 61). UDC has not yet realised the importance of maintaining uniqueness of Class Numbers. It is time for UDC to examine this problem afresh. The question will be again taken up in Sec 4 of this paper.

Minority Approach

The Laws of Library Science are democratic to the finish. They will not be satisfied unless they are respected in the service to even a minority of one reader. How the UDC and the CC seek to satisfy the several minorities of readers will be explained in Sec 4 of this paper.

Purpose of Classification: Finding of the Odense Meeting

The difference in the old and the new purposes of classification is brought out categorically by the following finding of the Odense Meeting: " DC and LC belong to the type of systems which were designed for shelving purposes, while UDC from the beginning was developed as a bibliographic system, designed for retrieval purposes and consequently belong to the same - more advanced - type of systems as the BC system (Bliss Bibliographic Classification) and the CC system (Colon Classification by Ranganathan)" (Para 6). In respect of DC, this observation is confirmed by the following statement by the Editor of DC: "The latest ... full edition of DC was prepared as a shelf classification which could meet the needs of general libraries of any size, though not necessarily those of special libraries ... it is not intended to be used for deep bibliographic

analysis" (7). In respect of LC, the observation of the Odense Meeting is confirmed by the following statement of Putnam: "The system of classification ... is one devised from ... a consideration of the particular conditions in this Library (Library of Congress), the character of its present and probable collection and of its probable use ... ' (32). LC is thus a scheme tailored to meet the arrangement of the books of a particular library on its shelves.

Fallacy of Resisters

The antithesis between a Scheme for Classification for shelf arrangement of books and one for bibliographical classification- that is, a Scheme for Classification for the arrangement of the main entries in the classified part of a documentation list of micro subjects - arises from a fallacy. Without actual experience, the resisters to the adoption of a so-called "Bibliographical Classification" to 'Shelf Arrangement' assume that the Class Numbers of books also will have many facets and will be as long as those for micro documents. If the resisters actually apply a so-called "Bibliographical Classification", such as CC, to an assortment of a few hundreds of books, then they will see that a Classificatory Language which gives co-extensive Class Numbers with many facets, though long to subjects of minute extension and deep intension, can give for books Class Numbers with very few facets and as short as and perhaps even shorter than, the so-called "Library Classification '. The versatility of CC is comparable to that of the trunk of an elephant which has at once the amazing strength to uproot a tree with ease and also the nimble simplicity to pick out a grain with equal ease.

Facts of the Case

The correct way of deciding the issue is the statistical one. A sample of 1,300 books consisting of those lent out during one month from the Madras University Library was used as the basis for statistical study. They were classified by CC and DC. It was found that the average number of digits for a Class Number was 4-8 in CC - a so-called "Bibliographical Classification - and 5.8 in DC -a so-called "Library Classification" (42, 65). Thus, the view of the resisters to the use of one and the same Scheme for Classification both for shelf arrangement and for documentation lists is without basis.

2 SEQUENCE OF MAIN SUBJECTS

2.1 Finding of the Odense Meeting

A finding of the Odense Meeting concerns the sequence of the Main Subjects in the different schemes. It is as follows: "The main structure [that is, the sequence of the Main Subjects] of all the three systems [BC, LC, and UDC] is antiquated and not consistent with the consensus of the scientists of today. This is of course very regrettable from the point of view of a modern library" (Para 5).

2.2 Recent Changes in UDC

Being based on DC, the sequence of the Main Subjects in UDC is substantially the same as in DC. These Main Subjects are to be found among the 1,000 subjects

enumerated in the Third Summary in DC. The Odense Meeting noted that attempts were being recently made to modify the sequence of the Main Subjects in UDC at certain points. One such change is bringing the Main Subjects Literature and Language in juxtaposition. Here is the direction in the Schedule of UDC: "To bring together Linguistics and Literature in libraries or private collections, Sec 4 may be abandoned and Linguistics grouped here [in Sec 8] by means of the special subdivision ".07" which is also attachable to any specific language number under 82/89. Thus,

8	Languages, Literature, and Linguistics.
8.07	Philology, Linguistics generally. As in 41.
839.3.07	Dutch philology, Linguistics" (4).

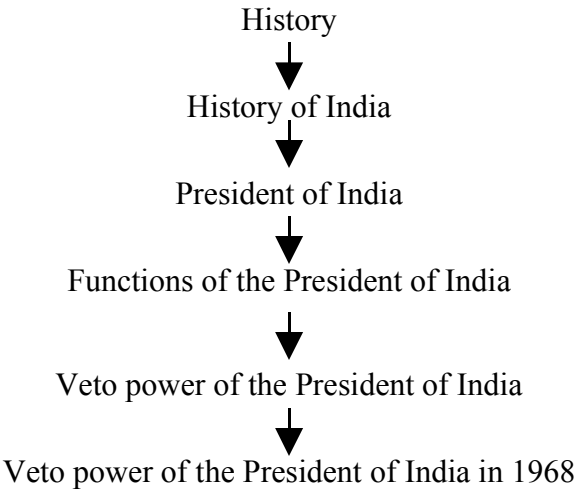
This change has been rightly appreciated by the Odense Meeting (Para 5). But there are other spots in the sequence of the Main Subjects in UDC, needing rearrangement to bring UDC into conformity to the "consensus of the scientists of today". An important need is to bring Social Sciences and History into juxtaposition, and Philosophy, Religion, Fine Arts, Literature, and Linguistics - which are collectively known as Humanities - into juxtaposition.

2.3 Historical Setting

To go the whole hog in the matter of the sequence of the Main Subjects, we should take a historical view of the matter. During recent years, we have begun to distinguish between the "Classification of the Universe of Knowledge" and the "Classification of the Universe of Subjects". Here, the term 'Subject' means, "An organised or systematised body of ideas, whose extension and intension are likely to fall coherently within the field of interest and comfortably within the intellectual competence and the field of inevitable specialisation of a normal person"(62).

2.3.1 Main Subject

In the early years, ideas of large extension were organised and systematised into subjects and were embodied in books. During the last few centuries the extension of the ideas organised and systematised into subjects is becoming progressively narrow. Moreover, even subjects of extension, too narrow for embodiment in books, are being embodied in articles in periodicals. These too have to be provided for in the Schedule for Classification. Therefore, it is no longer sufficient for a Scheme for Classification to have the capacity to arrange macro subjects alone in a helpful sequence; it should also be able to arrange micro subjects similarly. The need for this came to be realised forcibly after World War II, as a social necessity for the prevention of the dissipation of research-potential. A Micro Subject is found to be a subdivision of a Macro Subject. In fact, we get a hierarchy or a chain of subjects of varying degrees of extension, beginning at one end with a small "bit" of Micro Subject and ending at the other end with a large Macro Subject. We have for example the chain:



Here, "History" is the ultimate Macro Subject; and "Veto power of the President of India in 1968" is the ultimate "bit" of Micro Subject. The top two links of the chain are certainly Macro Subjects; and equally certainly, the last two links have only the status of Micro Subject at the present time. Of the links 3 and 4, it is difficult to assert about their status. The trend in the world of books is to upgrade Micro Subjects as Macro Subjects. The different topmost or ultimate Macro Subjects are called `Main Subjects'. Obviously, the number of Main Subjects will be small, while the number of "bits" of Micro Subjects will be very large and tend towards infinity as time goes on. Therefore, it is usual to divide the Universe of Subjects into Main Subjects, at the first step. Traditionally a few Main Subjects have been recognised; and these are being added to in small doses. Due to the exigencies of notation, DC and therefore UDC have moved one step backwards and introduced in the schedule certain Comprehensions of Main Subjects and treated them as if each Comprehension of Main Subjects were itself a Main Subject. These are, "3 Social Sciences", "5 Pure Sciences", "6 Technology", and "9 General Geography, History, etc".

2.4 Consensus of Philosophers

2.4.1 Vedic System

From the Vedic times downwards, the philosophers have been interested in the division of knowledge qua knowledge and not of subjects qua subjects. Moreover, they had only attempted to break down the Universe of Knowledge into a few broad divisions and arrange them in a helpful sequence. The Vedic sequence consisted of the following four Divisions of knowledge:

1. ‘Dharma’, comprehending the ensemble of the modern Main Subjects collectively of Law, Religion, Ethics, and Sociology;
2. ‘Artha’, comprehending the ensemble of the modern Main Subjects denoted by the term `Applied Sciences' - natural as well as social;

3. ‘Kama’, comprehending the ensemble of the modern Main Subjects collectively of Linguistics, Fine Arts, Literature, and those denoted by the term 'Pure Sciences'; and
4. ‘Moksha’, comprehending the ensemble of the modern Main Subjects collectively of Philosophy and Mystical experience.

2.4.2 Greek System

In the Greek period several systems were introduced by different philosophers and the influential system was that of Aristotle. The outline of his system consisted of Economics Politics, Law, Creative Art, Mathematics, Physics, and Theology (Metaphysics).

2.4.3 Scholastic System

The universities have been influenced by the Greek System; so also the libraries. It was modified by them into what is known as the Scholastic System.

2.4.4 Baconian System

In the early seventeenth century Francis Bacon gave the following system:

1 History, comprehending the ensemble of Natural History, Arts including Literature, and Civil History;

2 Poetry, comprehending the ensemble of Lyrics, Fables, and Allegories; and

3 Philosophy, comprehending the ensemble of Natural Theology, Physical Sciences, Philosophy proper, Sociology, and Economics.

2.4.5 Inverted Baconian System

The above-mentioned philosophical systems exercised a great influence on the design of library classification in the nineteenth century; in particular, Bacon held sway for a long time. The sequence of the Main Subjects in DC is said to be a kind of an inverted Baconian sequence. If this be true, the sequence of Main Subjects in UDC also should be described as inverted Baconian. Perhaps, in a way the sequence of the Main Subjects in DC and in UDC may be taken to be consistent with the consensus of the philosophers as it had reached at the beginning of the nineteenth century.

2.5 Consensus of Scientists: Serial System

The pressure of Natural Sciences led the philosophers of the early nineteenth century to abandon the socio-centred sequence of the Vedic system, the university-centred sequence of the Scholastic system, and the psychology-centred sequence of the Baconian system. This pressure led to the concept of the Serial Dependence of subjects. In the first half of the nineteenth century, Auguste Comte started off a Serial System of knowledge (6): His sequence of Main Subjects was: Mathematics, Astronomy, Physics, Chemistry, Biology, Social Physics. Each of these Main Divisions of knowledge was dependent for its development on the use of the preceding one. On the same principle,

Herbert Spencer arrived at the sequence: Logic, Mathematics, Mechanics, Physics, Chemistry, Astronomy, Geology, Psychology, and Sociology (78). These Serial Systems concerned themselves with pure disciplines only. However, they show the new trend in the consensus of scientists. About the same time, Ampere recommended the interpolation of each applied science next to the pure discipline on the use of which it was believed to be essentially dependent (1).

2.5.1 Sequence of Main Subjects in CC

CC divides the Universe of Subjects into three major groups arranged as follows:

1 Natural Sciences and their applications;

2 Humanities; and

3 Social Sciences and their applications.

In the first group, the progression of the pure discipline consists of Mathematics, Physics, Chemistry, Geology, Botany, and Zoology. This is a progression from the abstract to the concrete. These are described as forming successive "Levels of Integration" (15). After each pure discipline, is inserted an applied subject mainly depending on it Thus, Engineering after Physics; Technology after Chemistry; Mining after Geology; Agriculture after Botany; Animal Husbandry and Medicine after Zoology; and the residual applications of sciences after Medicine. In the subjects in the two groups Humanities and Social Sciences taken together, the progression is from the natural to the artificial. Fine Arts and Literature are the most natural. Law is the most artificial (45, 67). There is also some attempt to bring the pure disciplines of these groups and their applications in juxtaposition. Social Service after Sociology is an example. Political Science and History are in the same relation though they come in the inverted sequence. The reason for this inversion is that Political Science was evolved as a discipline comparatively later than the other pure disciplines. The interval was much greater than that in the Natural Sciences. The juxtaposition of Psychology and Education may be taken as an example. Thus the sequence of the Main Subjects in CC conforms to the current consensus among the scholars and the scientists.

2.6 Not Wholly Important

In any Scheme for Classification the sequence of the Main Subjects is not however very important. In the first place each Main Subject will have thousands of books on it forming a single block. Whatever be the sequence of the Main Subjects in the Scheme, these blocks will usually be arranged in a different sequence, in order to satisfy Law 4 of Library Science - Save the Time of the Reader. For example, in a Generalist Library, Literature is the most popular. Therefore, it saves the time of the majority of readers if this block of books is inserted first. Linguistics has only very low priority in the attraction of readers. On the other hand, a subject like History or Economics or Philosophy will attract more readers. Therefore, to satisfy Law 4 of Library Science, these blocks may have to be inserted between the Literature block and the Linguistics block. In other words, a library will have to adopt only a "Broken Sequence" of the Main

Subjects. But this need not be done in the catalogue. Secondly, the number of possible sequences of Main Subjects runs to millions. It is impossible to pick one of them as the most helpful sequence. What is wanted is only a reasonably helpful sequence.

2.7 Preference of a Scheme With Helpful Sequence of Main Subjects

This statement should not be taken to imply

1. Either that an outmoded scheme may be chosen for a new library;

2. Or that it should be continued in an old library. A new library will do well to choose, as its Scheme for Classification, a scheme that gives a reasonably helpful sequence according to the current consensus amongst scholars and scientists. Even a library on a system with a very unhelpful sequence of Main Subjects may change over to a better scheme, before the number of volumes becomes too large. Perhaps even in huge library collections, it may be desirable to introduce a new system conforming to the current consensus among scholars and scientists. This can be done, without undue cost of revision, by adopting the "Method of Osmosis" (28).

2.8 New Main Subjects

2.8.1 Attribute of Main Subjects

One of the attributes of a Main Subject scheduled by a Scheme for Classification is that it cannot be a subdivision of any other Main Subject. We should also exclude from Main Subjects any subject comprehending two of more Main Subjects. Each Main Subject has its own distinctive field in the Universe of Subjects and also its own distinctive technique of study. Even this criterion may not prove sufficient to be taken as a rigid definition of the term 'Main Subject'. It is for this reason that, while observing these attributes of a Main Subject, a Scheme for Classification safeguards its position by way of abundant caution with the statement that it "Postulates the Main Subjects". New Main Subjects emerge often, though slowly. A few Main Subjects, that have emerged in recent years are, Pure Theory of Standardisation, Pure Theory of Management, Pure Theory of Communication, Pure Theory of Conduct of Meetings, and Social Work. Presently, we are finding that a new Main Subject can be formed by the "Fusion" of two Main Subjects; Bio-physics and Bio-chemistry are examples. In the choice of a Scheme for Classification, the capacity of the notational system to accommodate newly emerging Main Subjects in a fairly helpful place among the already existing Main Subjects is important. In a sense it is even more important than the existing sequence of the Main Subjects in the Scheme.

2.8.2 Main Subjects in DC

As stated in Sec 22, the Main Subjects in DC are to be picked out from the "Third Summary, the 1000 Sections". Here is a schedule of them:

02	Library Science	574	Biology
1	Philosophy	58	Botany
15	Psychology	59	Zoology
2	Religion	61	Medicine
32	Political Science	62	Engineering
33	Economics	63	Agriculture
34	Law	634.9	Forestry
36	Social Welfare	636	Animal Husbandry
37	Education	64	Home Science
4	Linguistics	65	Management
51	Mathematics	66	Technology
519.2	Statistical Methods	7	Fine Arts
52	Astronomy	8	Literature
53	Physics	91	Geography
54	Chemistry	93/99	History
55	Geology		

The number of Main Subjects recognisable as such are thus 31. It will be noticed that 5 Main Subjects are represented each by a single digit; 22 by two digits; 2 by three digits; and 2 by four digits. Of the 1000 Class Numbers in the Third Summary, many have been given over to subdivisions of Main Subjects rather extravagantly; with the result that two Main Class Numbers have to have three digits each and two four digits each. The table of three digited numbers is thus choked up. The accommodation in DC of any newly emerging Main Subject is going to be a problem. Moreover, Main Subjects with three or four digits come in as a wedge between the subdivisions of one and the same Main Subject. This is not helpful. This is the penalty to be paid by DC for its using the pure base of Indo-Arabic numerals for its notational system.

2.8.3 Main Subjects in UDC

UDC has adopted the Main Subjects of DC with the following changes in the Class Numbers:

159.9	Psychology	634.0	Forestry

Al the remarks on DC apply also to UDC.

2.8.4 Main Subjects in CC

We shall next examine the capacity of the notational system of CC to accommodate the Main Subjects. Its notational system uses the Indo-Arabic numerals, the Roman capitals, and the Roman smalls as its base making allowance for certain omissions and other considerations. There are eight digits in the Sector of Indo-Arabic numerals; twenty-four in the Sector of Roman capitals; and twenty-three in the Sector of Roman smalls. Further, the digits z,Z, and 9 are made semantically empty digits though retaining the ordinal value. The three digits T, V, and X are postulated to be Emptying Digits - that is, they empty the preceding digit of its semantic value though the ordinal value is allowed to be retained. Further, the three digits U, W, and Y are both Empty and Emptying Digits. By this arrangement CC has accommodation for about 5000 Main Subjects. There are 32 single digited numbers to represent Main Subjects. All these have already been used up; there are 184 two digited numbers to represent Main Subjects; of these 44 have already been used up; there are still 140 numbers free. Of the three digited numbers, only a few have been brought into use till now. GYC for Biophysics and GYE for Bio-chemistry are examples. The others are free.

2.8.5 New Criterion

The number of available Class Numbers with not more than three digits, which can be used for representing Main Subjects, should be an important criterion in the choice of a Scheme for Classification for a new library or for an old library desiring to modernise its Scheme for Classification for all new accessions and for the active books in the old stock using the "Method of Osmosis" (28). Also, the capacity to accommodate new Main Subjects should be given due weight in the design of new Schemes for Classification.

3 KINDS OF CLASSIFICATION

A far more important and complex problem than the identification of the Main Subject concerns the Compound Subjects in the Universe of Subjects. They are innumerable; their mutual neighbourhood-relation is multi-dimensional; and the helpful sequence among them is far more difficult to determine; the design of Class Numbers to represent them so as to preserve the preferred sequence among them needs a considerable care and far-sight; fault in their design has been responsible for the break down of many a Scheme for Classification. Therefore, the choice of the Scheme for Classification for a library will have to depend upon its treatment of Compound Subjects - their Sequence and their respective Class Numbers.

3.1 Terminology

3.1.0 Need for Terminology

The discussion of this topic will be facilitated by first agreeing on the terminology to be used. Failure to use an agreed terminology is generally responsible for a good deal

of the failure in the communication of ideas in the discipline of classification. Therefore, the Indian Theory of Classification has established a well-defined system of terminology, minimising if not removing the incidence of homonyms and synonyms (18, 46). Some of the terms of the Indian Terminology, needed for the discussion in this paper are given in the succeeding sections.

3.1.0.1 Idea

The product of thinking, reflecting, imagining, etc got by the intellect by integrating with the aid of logic a selection from the apperception mass, and/or what is directly apprehended by intuition, and deposited in the memory.

3.1.0.2 Subject

This has been already defined in Sec 23.

3.1.0.3 Main Subject

This has been already defined in Sec 281.

3.1.1 Canonical Subject

Each of the Main Subjects - Mathematics, Physics, Engineering, Technology, Geology, Fine Arts, Philosophy, and Geography - is best divided, in the first instance, along traditional lines instead of on the basis of any other recognisable characteristic. These divisions are called 'Canonical Subjects'. The following are some examples:

1 The Main Subject Engineering is first divided into Civil Engineering, Building Engineering, Irrigation Engineering, Transport (Track) Engineering, Sanitary Engineering, Mechanical Engineering, Production Engineering, and so on.

2 The Main Subject Philosophy is divided into Logic, Epistemology, Metaphysics, Ethics, Aesthetics, and so on.

3 The Main Subject Geography is divided into Mathematical Geography, Physical Geography, Geomorphology, Oceanography, Meteorology, Biogeography, Anthropogeography, Political Geography, Economic Geography, and so on.

3.1.1.1 Systems

Some Main Subjects admit of being divided into Systems (27, 31, 41). The system-divisions too may be taken to be Canonical Subjects. The following are some examples:

1 Elliptic Geometry. Hyperbolic Geometry.

2 Relativistic Physics. Quantum Physics.

3 Alchemy.

4 Ayurvedic Medicine. Homoeopathy.

5 Greek Philosophy. Indian Philosophy. Monistic Philosophy. Pluralistic Philosophy. Jain Philosophy. Buddhistic Philosophy.

6 Gestalt Psychology. Behaviorisms. Reflexology. Typological Psychology. Field Psychology.

7 Pestalozzi system of Education. Montessori system of Education. Basic Education.

8 Cooperative Economics. Socialistic Economics. Com-monistic Economics.

3.1.1.2 Specials

Some Main Subjects admit of being divided into Specials (41). Perhaps, some of the specials-divisions also may be taken to be Canonical Subjects. The following are some examples:

1 Nuclear Physics. Surface Physics. High Vacuum Physics. Low Temperature Physics. High Temperature Physics.

2 Soil-less farming. Dry farming.

3 Child Medicine. Female Medicine. High-altitude Medicine.

4 Small Scale Economics. Economics of Public Enterprise.

3.1.1.3 Superimposed Canonical Division

Superimposition of systems and specials may also form a Canonical Basic Subject.

3.1.2 Basic Subject

'Basic Subject' is a generic term used to denote either a Main Subject or a Canonical Subject.

3.1.3 Isolate Idea

The term 'Isolate Idea' denotes an idea not yielding a subject by itself; but it gives rise to a subject when attached to a Basic Subject. The following are some examples:

1 The idea "Gold" is an Isolate Idea. It is not a subject by itself. But when attached to different Basic Subjects, it yields subjects such as Chemistry of Gold, Technology of Gold, Mining of Gold, Economics of Gold, and Sociology of Gold.

2 The idea "India" is an Isolate Idea. It is not a subject by itself. But when attached to different Basic Subjects it yields subjects such as Geology of India, Agriculture in India, and Education in India. Ideas such as "India" are called Space Isolate Ideas.

3 The idea "Year 1968" is obviously an Isolate Idea. It is not a subject by itself. But when attached to a Basic Subject it yields a subject. This is called Time Isolate Idea.

4 Properties such as Structure, Function, Disease, Colour, and Hardness are called Matter (Property) Isolate Ideas.

5 Materials such as Timber and Steel are called Matter (Material) Isolate Ideas.

6 Ideas such as "Measurement", "Prevention", and "Cure" are called Energy Isolate Ideas.

None of these can be a subject by it self. But any of these will yield a subject when attached to a Basic Subject.

3.1.4 Facet

'Facet' is a generic term used to denote either a Basic Subject or an Isolate Idea. It is used in referring to the components of a subject having both of them.

3.1.5 Compound Subject

The term 'Compound Subject' denotes a subject with a Basic Facet - this is compulsory - and one or more Isolate Facets added after it. For example, "Cure of inflammation of eyes in a human-being". This is a Compound Subject going with the Basic Facet Medicine. This Basic Facet is represented in the name of the Compound Subject by the term 'in a human-being'.

3.1.6 Fundamental Category

In the Indian Theory of Classification, Personality, Matter, Energy, Space, and Time are postulated to be the Five Fundamental Categories, of one, and only one of which, an Isolate Facet in a Compound Subject is deemed to be a manifestation., For example in the Compound Subject mentioned in the preceding section,

1 The isolate "Eyes" is deemed to be a manifestation to the Fundamental Category "Personality";

2 The isolate "Inflammation" is deemed to be a manifestation of the Fundamental Category "Matter (Property)"; and

3 The isolate "Cure" is deemed to be a manifestation of the Fundamental Category "Energy".

Space and Time Isolates have been illustrated in Sec 313. There are also some other postulates such as the Postulate of Rounds and Postulate of Levels (36, 57).

3.1.7 Complex Subject

A subject in which two or more Basic Subjects or Com-pound Subjects or Basic Subjects and Compound Subjects are brought into relation is called a Complex Subject (56). The following are some examples:

1 "Calculus for Electrical Engineers". Here, the subject of exposition is "Calculus". The subject "Electrical Engineering" biases the exposition. It is called the ' Biasing Phase'. " Calculus" is Phase 1 and "Electrical Engineering" is Phase 2. The relation is called 'Bias Phase Relation' (32).

2 "Mathematical Study of Investment". Here, "Investment" is Phase 1. "Mathematics" is Phase 2. It is called the 'Tool Phase'. The relation is called 'Tool Phase Relation' (29). This concept was abandoned for some time. It is now found necessary to revive it.

3 "Buddhistic influence on early Christian Rituals". Here, "Christian Rituals" is Phase 1. "Buddhism" is Phase 2. It is called the 'Influencing Phase'. The relation is called 'Influencing Phase Relation' (33).

Apart from stating here that a Scheme for Classification should have provision for the representation of Complex Subjects, these subjects do not call for any further remarks in this paper.

3.1.8 Other Terms

Four terms denoting respectively four kinds of classification are defined in the next four sections. The later sections mention the three planes of work involved in classification and introduces the principles and the ideas by which such work can be guided.

3.2 Enumerative Classification

A Scheme for Classification listing all possible subjects including Compound Subjects, along with their Class Numbers in a single schedule is called an 'Enumerative Classification'. Rider's International Classification is an example. LC is virtually ail Enumerative Classification. Both of these give the subjects including Compound Subjects in a fairly helpful sequence (48). LC uses Integral Notation.

3.3 Almost Enumerative Classification

DC is an Almost Enumerative Classification. Most of the Compound Subjects in DC are enumerated in a single schedule extending over a few hundreds of pages. It uses Decimal Fraction Notation. This notation highlights the Hierarchical Sequence of the Compound Subjects going with one and the same Basic Subject. DC provides also

1 A short schedule of Common Isolates (denoting forms of exposition), any one of which may occur as a facet in any Compound Subject. These are called 'Standard Subdivisions'. It prescribes the digit '0' (zero) as the Connecting Digit for this facet; and

2 A short schedule of Common Space Isolates, any one of which may occur as a facet in any Compound Subject. This schedule is called 'Area Table'. It prescribes the digit-pair '09' as the Connecting Digit for Space Facet.

In view of the provision of these two schedules of Common Isolates for use as Facets of any Compound Subject, DC is called an 'Almost Enumerative Classification' (49).

3.4 Almost Faceted Classification

UDC is an example of an Almost Faceted Classification. As in DC, most of its Compound Classes are enumerated in a single schedule extending over a few hundreds of pages. The core of this schedule extending, say, to subjects of order 3 or 4 is generally the same as in DC. There are changes in subjects of higher order. As DC does, UDC also uses the Decimal Fraction Notation highlighting the Hierarchical Sequence of the Compound Subjects going with one and the same Basic Subject. UDC provides also

1 A short schedule of Common Isolates (denoting forms of exposition), any one of which may occur as a facet in any Compound Subject. These are called 'Common Auxiliaries of Form'. It prescribes the digit-group (0 ...) as the Connecting Device for Common Isolate Facet;

2 A short schedule of Common Time Isolates, any one of which may occur as a facet in any Compound Subject. These are called 'Common Auxiliaries of Time'. It prescribes the digit-pair "..." as the Connecting Device for Time Facet;

3 A short schedule of Common Space Isolates, any one of which may occur as a facet in any Compound Subject. These are called 'Common Auxiliaries of Place'. It prescribes the digit-pair (...) as the Connecting Device for Space Facet; and

4 In association with some subjects, a short schedule of Special Isolates, any one of which may occur in any Compound Subject going with the said Subject. These are called 'Special (Auxiliary) Subdivisions'. They are also called 'Analytical Subdivisions'. Two kinds of Analytical Subdivisions are recognised with the Connecting Digit "-" and the Connecting Digit-Pair ".0" respectively.

The former is more widely applicable than the latter. These schedules of Special Isolates may include indifferently manifestations of any one of the Fundamental Categories Energy,, or Matter (Property), or Matter (Material), or Personality. Occasionally, they also include Secondary Phases. UDC is described as an Almost Faceted Classification on account of its providing dozens of schedules of isolates, any one of which may occur as a facet either in all Compound Subjects or in Compound Subjects going with particular specified Subjects (50).

3.5 Freely Faceted Classification

At present CC is the only Freely Faceted Classification. This quality of it has been occulted by the heading of the schedules for the Compound Subjects going with a Basic

Subject being headed with a facet formula. This was done for the benefit of beginners. This formula has produced an impression of rigidity in respect of the possible number and of the sequence of the facets of Compound Subjects. This conflict between the reality about the number and the sequence of facets and the needs of beginners will be avoided in the forthcoming Edition 7 of CC. Unlike in DC and UDC, there is no long schedule of Compound Subjects in CC. It has only schedules for the following and they are all brief: 0 Basic Subjects;

1 Anteriorising Common Isolates;

2 Common Time Isolates of two levels;

3 Common Space Isolates of three levels;

4 Common Energy Isolates;

5 Common Matter (Property) Isolates;

6 Common Matter (Material) Isolates (not yet worked out);

7 Common Personality Isolates; and

8 Special Energy Isolates of different Rounds and Special Matter (Property) Isolates, Special Matter (Material) Isolates, and Special Personality Isolates of different Rounds and Levels. Each of the isolates in all the seven schedules of Common Isolates may occur as a facet in any Compound Subject going with any Basic Subject. But each of the isolates in any of the Special Isolates can occur as a facet in the Compound Subjects going with the specified Basic Subject only. CC prescribes Connecting.

Digits for the several facets as shown below :

Fundamental Category in any Round or Level	**Connecting Digit**
Time	‘ (Single inverted comma)
Space	. (Dot)
Energy	: (Colon)
Matter	; (Semi-colon)
Personality	, (Comma)

No Connecting Digit is prescribed for the Common Anteriorising Isolate. But its first digit is a Roman small and it is invested with Anteriorising Capacity - for example, "Va Bibliography of History" precedes "V History" (30). CC is described as a Freely Faceted Classification, as it puts no arbitrary restriction on the number and sequence of the facets a subject may have. It takes any subject as it is and picks out and arranges whatever facets it has in accordance with some postulates pertaining to near-seminal level (51).

3.6 New Trend In Classification

Apart from leading to a Freely Faceted Classification, the Indian Theory of Classification marks another new trend. The work to be done in the design of a Scheme for Classification is explored independently in the Idea Plane, the Verbal Plane, and the Notational Plane respectively.

3.6.1 Verbal Plane

In the Verbal Plane, it emphasises the need for establishing a homonym-free, synonym-free, agreed Standard Terminology for denoting Basic Subjects and Isolate Ideas in each discipline. In this work, the library profession can play only the subordinate role of insisting upon its importance. It can only be a prompter. But, it must keep prompting incessantly. The main work in the Verbal Plane has to be done by the respective subject specialists and linguists. To regulate their work along consistent and productive lines they must establish some Canons of Terminology for guidance. A simple set of such Canons was drawn up by me in 1950 (68, 69). These Canons should be enlarged considerably. Since 1952, the Terminology Section of the International Standards Organisation (ISO/TC37) has been promoting the establishment of Standard Glossaries. The Standards Bodies of many of the countries have set up Sections of their own to look after this problem. They are publishing Standard Glossary in one discipline after another. In India, the Indian Standards Institution has already brought out Standard Glossaries for 45 subjects. UK has already published Glossaries of Standard Terms for use in 108 subjects; USA has done so in 90 subjects. A Scheme for Classification should use these Standard Terms in their schedules. To be of use in the schedules of a Freely Faceted Classification, it is necessary that the Standard Glossary in each discipline provides not only derived composite terms for large units of ideas such as Compound Subjects wherever possible, but also the fundamental constituent terms for small units of ultimate ideas occurring as facets of Compound Subjects. Sufficient thought has not yet begun to be given to such standard isolate terms in the Standard Glossaries being developed today. To facilitate this work, members of the library profession should be associated with the subject specialists and linguists engaged in establishing Standard Glossaries.

3.6.2 Influence of Subject Heading

The importance of having Crisp Standard Words to denote the diverse isolates in the different schedules of isolates is highlighted by the Chain Procedure developed in India to derive a Subject Heading for the catalogue from each Class Number. In this method, the Class Number is thrown in the form of a Chain. This Chain acts as a tow-line to take us to the right Subject Headings arising out of the Class Number. This method of choosing and rendering a Subject Heading will give the best result if each isolate idea is expressed by a unique - unique within the context of the schedule of isolates concerned - standard word, though this is not essential for classification itself. But the advantage of the symbiosis of Class Numbers and Subject Headings should not be turned down lightheartedly. UDC appears to be unmindful of this helpful linking up of classification and cataloguing. DC too fails to do the best. This is perhaps due to the idea of Chain

Procedure not having taken shape even in the subconscious level of the designers of those schemes and therefore not having been seized even through flair. In CC, even in its early years, its faceted structure led unconsciously to the use of Standard Terms to denote isolate ideas. This fed to the discovery of the advantage of Chain Procedure. This, in its turn, is now leading to the use of Standard Words for isolates in a conscious way. It is one of the duties of the librarians associated with any Committee on Standard Terminology to remember and press the demand of Subject Headings on the isolate terms to be used in the Schedules for Classification.

3.7 Idea Plane

3.7.1 Role of the Library Profession

Ideas are created by subject specialists. They give rise to either Basic Subjects or Compound Subjects with Isolate Ideas. The library scientists should garner these ideas and sort them out into the three groups - Basic Subjects, Compound Subjects, and Isolate Ideas. They should further sort out the group of Isolate Ideas into several sub-groups, such as

1. Common Isolate Ideas, any one of which can occur as a facet in the Compound Subjects going with any Basic Subject; and

2. Special Isolate Ideas, any one of which can occur as a facet in the Compound Subjects going with a specified Basic Subject. Further, the Isolate Ideas in each of the sub-groups should also be marked respectively, as:

1. Isolates denoting forms of exposition (Anteriorising Common Isolates in CC); and

2. Isolates according to the fundamental categories of which they may be deemed to be manifestations. This work of sorting out will be particularly exacting in the case of newly emerging subjects.

3.7.2 Provisional Grouping

We shall have to begin with a provisional grouping, in consultation with the subject specialists concerned, wherever necessary. The concepts about them will get stabilised after a few years. Thereafter the grouping can be made relatively more stable or nearly permanent.

3.7.3 Disturbance by the Emergence of New Ideas

Now and again a new Isolate Idea or a new Basic Subject or a new Compound Subject emerges in the course of pursuit of research by a subject specialist. The library scientist should sense it as new and, if it is an Isolate Idea, put it into the proper group. He should also determine for the new Isolate Idea or the new Basic Subject, as the case may be, the most helpful place among the already existing ones. Sometimes it will happen that

any such newly emerging Isolate Idea or Basic Subject or Compound Subject throws new light on the existing sequences of them and calls for a new realignment of the sequence concerned. This will call for a change in the schedule and in particular in some Class Numbers.

3.7.4 "They Know Not What They Say"

Such occasional changes in Class Numbers are inevitable on account of the turbulent state of the Universe of Subjects. Practising librarians should realise this. Every librarian should be prepared to change the Class Numbers of the concerned subjects whenever demanded by the developments in the Universe of Subjects. Sometimes a librarian says, "Classificationists are talking only theory. They do not know the difficulties of working librarians. Administratively it is difficult, if not impossible, to change the Class Numbers." This connotes a pathetic attitude comparable to that of King Canute ordering the ocean not to send forth waves. Verily, such a librarian "Knows not what he says". Such a librarian should take to heart the significant statement of H Poincare, the great scientist, "The men most dissatisfied of theory get from it, without supporting it, their daily bread; deprived of this food, progress would quickly cease and we should soon congeal into immobility" (26).

3.7.5 A Way Out

Fixing the most helpful position for each Compound Subject in the overall sequence of subjects is an arduous one. Out of the work done in the Idea Plane in India, has emerged a set of postulates and guiding principles for the design of a Scheme for Classification. With their aid any Compound Subject can be found its helpful place in the sequence of subjects, with ease and consistence. According to B I Palmer, these postulates and principles, "have worked a revolution in our subject, and changed it from a dull theory with apparently little relevance to practice into an incisive intellectual tool which could be used to analyse existing schemes or to help in the construction of new ones" (25). The Wall-Picture Principle is particularly a versatile guide. It helps in determining helpful sequence among:

1 The Facets of a Compound Subject;

2 The Isolates in any facet; and

3 The Isolates in any array (38, 58).

3.7.6 Systematic Procedure for Practical Classification

Work in the Idea Plane has also led to a systematic procedure, consisting of five steps, in arranging the facets of a Compound Subject prior to translating the focus in each facet into its focal number (39,64). Practically CC, DC, and UDC conform to the result of this procedure.

3.7.7 Residual Problem

The residual problem, not yet reduced to an objective solution, is the determination of the fundamental category Energy, Matter, or Personality of which an isolate occurring as a facet in a Compound Subject should be deemed to be a manifestation. The solution still depends largely on flair though of course it improves with experience. Here is an example of improvement with experience. The postulational approach to classification has been made the basis of teaching practical classification by me and my colleagues during the last ten years. Experience shows that the students pick up the flair to identify the fundamental categories presented by the kernal terms in the name of a Compound Subject to the extent sufficient to classify most of the books coming to the library. But there are subjects which baffle even a veteran. For example, till 1962, the idea "Steel Pillar" in Production Engineering, was taken to be made of two different Isolate Ideas "Steel" and "Pillar". The former was taken to be a Material Matter Isolate and the latter a Personality Isolate. It has now been realised that "Steel" is only a characteristic used in differentiating this particular kind of Pillar in the Universe of Pillars from others such as Aluminium Pillar. Therefore, the idea "Steel" should not be separated away from the idea "Pillar" and shunted off to a different facet. "Steel Pillar" as a whole is a Personality Isolate.

3.8 Notational Plane

3.8.1 Allergy to Notational System

Allergy to Notational System usually leads to aberration in judgment while choosing a Scheme for Classification. It has gone through several stages. However, it has been steadily declining.

3.8.1.1 Allergy to Notation qua Notation

. It was a Saturday in September 1948. I was addressing the University Library Section of the Library Association at Birmingham. My old teacher of Bibliography, Esdaile, was in the chair. The subject was Challenge of Classification. I dealt with the need for classifying the books in a library and for fitting each subject with a unique class number. I gave several demonstrations. In his concluding speech the Chairman remarked in effect, "My old pupil has been dealing with Mystic Symbols. They are beyond me! I believe that there is much in a statement of Pollard of the British Museum Library. According to him, there is no better way of arranging books in a library than arranging them by their accession numbers". This is a measure of the allergy to Class Numbers prevailing in the nineteenth century. Even thirty years ago, all people had not been cured of it. I know a professor of the University of Madras referring to Class Numbers as hieroglyphics! Perreault has aptly described in the following words, the plight of persons allergic to class numbers: "To operate with Classification is, compared to operating with a Subject Heading Catalogue, is like finding one's way across the town with the aid of a map, as against asking directions at each street corner" (Para 7). This is now being realised. Therefore, the allergy to notation qua notation has been shaken off.

3.8.1.2 Allergy to Long Numbers

The designer of DC rightly decided to accustom persons to Class Numbers by slow degrees. Therefore, in 1876 he approved restriction to three digits. In each successive edition, he went on increasing the number of digits. Some Class Numbers reached great lengths in ed. 14. He increased the length as the subjects were of great intension. There was no other way to give them distinctive Class Numbers. However, allergy to long numbers make a few librarians to stick to the idea of three digits even today. But the majority have shaken off such an allergy.

3.8.1.3 Allergy to Mixed Notation

Then came Mixed Notation. This became necessary as a pure notation compelled a base too small to accommodate either all the Main Subjects or all the Coordinate Ideas in an array. Even in the numbering of motorcars, the need for Mixed Notation has been recognised; so also it is in telephone numbers. LC and CC have Mixed Notation. People are now slowly getting accustomed to a Mixed Notational System; and the allergy to it is being fastly shaken off.

3.8.1.4 Allergy to Punctuation Marks and Similar Digits

Then came the allergy - the last of the kind so far - to a Notational System having punctuation marks and other similar digits not found in the traditional species of digits - viz, Indo-Arabic numerals, Roman capitals, and Roman smalls. But inclusion of such digits has been found necessary in any Faceted Scheme for Classification; and it is now realised that the present and the future condition of the Universe of Subjects can be organised only by a faceted classification. This was reported by the Classification Research Group of UK to the International Congress of Libraries and Documentation Centres at Brussels in September 1955. The Plenary Meeting of the Congress held on 15 September 1955, consequently resolved that "The FID recommends that a deeper and more extensive study should be made of the general theory of classification, including facet analysis and also of their application in the documentation of specific subjects" (70). UDC and CC have introduced this set of new digits as Connecting Digits. People are getting slowly accustomed to them. Consequently, the allergy to punctuation marks and similar digits is being slowly shaken off. In the faceted scheme being developed by the American Institute of Physics, Punctuation marks are freely introduced into class numbers.

3.8.1.5 Habit Behind Allergy

Any allergy to any kind of Notational System has its root really in old habit. According to the Odense Meeting, "In the KSB-System of Classification the notation is composed of capital and small letters, which make the public librarians of Denmark less inclined to like it" (para 8). It is too late in the day to continue such a habit. Habits have to be changed whether we like it or not. An adult, with his mind fully charged with a particular habit usually develops allergy to any change in that habit. He resists change. But the younger generation does not have such an allergy to a Mixed Notational System

with punctuation marks and similar digits as Connecting Digits. This is because from the very beginning they get habituated to such a Notational System. Let not the rigidity of the old stand in the way of the freshness of the young getting the full benefit of a Mixed Notational System including punctuation marks and similar digits.

3.8.1.6 Testimony from Odense Meeting

The Odense Meeting has recorded, "The complex and expressive notation does not seem to influence the practical use in a negative way" (para 5). My own experience in the University of Madras when I was looking after it about 25 years ago, is even more positive. The janitor and his assistants could not under-stand the inside of books but they had no difficulty in arranging Colon Class Numbers; and yet they have a Mixed Notation and include punctuation marks as Connecting Digits. This is a proof that the so-called complexity in notation does not hinder the ease of arrangement on the shelves or of picking out books from the shelves.

3.8.2 Co-extensiveness of Class Number

By "Co-extensive Class Number" is meant a Class Number representing the Basic Subject and the isolate idea in each facet of a Compound Subject, unerringly and in full measure. To extend Perreault's analogy, "To operate with anon-coextensive Class Number is like finding the street of a friend's house with the aid of the town map, but being baffled by there being no door numbers in the houses." Reaching a non-co-extensive Class Number in the stack room or in the classified part of the catalogue is like entering such a street. The additional digit-group in a co-extensive Class Number corresponds to the door number. It puts the reader precisely at the Specific Subject he is looking for. The following are some examples of non-co-extensive Class Numbers in DC. It can be seen that each of these numbers represents two or more classes.

341.65 Compulsive measures short of war Sanctions, pacific blockade, embargo, economic boycott, intervention, international police

597.58 Acanthopterygii Berycoidea, Zeoidea, Percoidea, Carangoidea, Scombroidea, Trachinoidea, Blennioidea, Anancanthini, Chaetodontoidea, Plectognathi, Heterosomata, Scor-paenoidea, Batrachoidea, Pediculati, Gobioidea, Anabantoidea, Mugiloidea, Polynemoidea,
Ammodytoidea, Echeneoidea, Zenopterygii, Allotriognathi, Opisthomi, Synbranchii
Common names: Snappers, John Dorys, perches, basses, gobies, mackerels, blennies, pompanos, tunas, albacores, bonitos, swordfishes

620.182 Copper Brass, bronze, Muntz metal, phosphor bronze, gun metal, copper-aluminum alloys, copper-beryllium alloys, alluminium bronze

3.8.3 Paramountcy of the Idea Plane

The precise determination of the delimitation of a subject and of its helpful position amidst the other subjects, in which it should be placed, is entirely the function of the Idea Plane. The Notational Plane has nothing to do with it. Once the Idea Plane gives its finding, it is the duty of the Notational Plane to implement it precisely. A Notational

System incapable of this takes away considerably from the usefulness of a Scheme for Classification.

3.8.4 Starvation System

In the so-called 'Starvation System' of UDC, the Notational Plane often disobeys the Idea Plane. By "Starvation System" is meant " The signification of an existing number is fundamentally altered. If a new concept or a new scheme of division has to be introduced, it should get its place in a "blank" place and get a number or series of numbers which have never been used before. The old obsolete number or numbers are then left to starvation for a certain period, say ten years, so that the old users gradually can adapt their files to the new structure of the classification.

"So the procedure is as follows:

1 Old scheme (old numbering) declared obsolete and abandoned.

2 The old numbers may not be used again during 10 years (exceptionally a shorter a period may be fixed).

3 A new free number is chosen where a new logical or quasi logical, at least modern scheme is developed." (12) This amounts to the Notational Plane deciding all by itself and in its own way, the position of a new subject among the already existing subjects. In other words, the Notational Plane dictates to the Idea Plane. This is like the tail wagging the dog. This should not be allowed in any helpful Scheme for Classification.

3.8.5 Rama-Lakshmana Analogy

In the epic *Ramayana,* the hero Rama is in exile along with his concert Sita and his brother Lakshmana. On reaching Panchavati on the banks of the Godavari at a place near modern Nasik, they decide to settle down there for some time. Rama asks Lakshmana, "Will you find out a good place where we can put up a hut ?" Lakshmana replies, "You are the master. I am the servant. Finding the place is your function. Building the hut so as to fit in with *that place* is my business" (79). This points to a moral in classification. The Notational Plane should not find a place for the subject. Its business is merely to build the Class Number, so as to fit in the place found for it by the Idea Plane.

3.8.6 *Desiderata in the Notational System*

3.8.6.1 Number of Class Numbers

The Universe of Subjects is vast. It is evergrowing. Its present rate of growth is high. Perhaps it will become higher still as time passes on. Implication: The Notational System should provide an ever-increasing number of Class Numbers. It should not force us to give the same number to two different classes, whether they are coordinate with each other or one is subordinate to the other. This is another way of looking at the concept of "Co-extensive Class Number". Examples of one and the same Class Number,

unhelpfully representing several coordinate subjects as well as the more extensive subject to which they are all subordinate, have been given in Sec 382.

3.8.6.2 Physiology of the Eye and Psychology of the Memory

When millions of classes have to be represented each by its own co-extensive Class Number, the number of digits in several Class Numbers is bound to be large — even as many as 10 or 12. For example, UDC has the Class Number

633.913.431.1 Cryptostegia grandiflora Br.

This number has 10 substantive digits. UDC puts a dot after every three digits, just to break up the monotonous train of consecutive digits of the same species. DC would have written this number as "633.913 431 1" breaking the monotony by putting, a dot after the first three digits and merely leaving a space after every other three digits. In both cases the dot is a dummy; so is the space. It carries no meaning with it. This is done to break a long number into bits which can comfortably fall within a single sweep of the eye and be fit to be carried in the memory for a while. In other words, it is done to satisfy the physiology of the eye and the psychology of the memory. In CC the numbers are broken down into small groups by punctuation marks used as Connecting Digits indicating the Fundamental Category of which the succeeding group of digits is deemed to be a manifestation. In the experience of CC if facet analysis is done properly, it is seldom that an Isolate Number in a facet has more than three digits. It may be said that the optimum number is three and occasionally the maximum may be as many as six. It is believed that separating out the groups of the semantically rich or substantive digits by semantically less rich punctuation marks which have, all the same, a function of their own is more economical than to use mere meaningless dummies. In other words, the structural division apparent in a CC Number is calculated not only to give relief to the eye and to the memory but also to serve a semantic purpose.

3.8.7 Versatility of Notational System

According to the Indian Theory of Classification,

1. A Pure Notational System, consisting of Indo-Arabic numerals alone or Roman smalls alone or Roman capitals alone, has not been able to develop the necessary versatility;
2. A Monolithic Notational System devoid of a distinctive species of Connecting Digits for facets has not been able to develop the necessary versatility;
3. Even a Mixed Notational System with all of the above four species of digits is found to be inadequate to meet the demands of the Idea Plane;
4. The postulation of the end digit in each species of digits as an Empty Digit (53) has enabled the Notational System to lengthen each sector in an array by extrapolation;

5. The postulation of Emptying Digits (43, 54) has enabled the Notational System to interpolate coordinate numbers between any two existing consecutive coordinate numbers; and
6. As and when the demand of the Idea Plane transcends the versatility of even such a Notational System, new ways of increasing the versatility of the Notational System should be found.

4 ALTERNATIVE CLASS NUMBERS AND SPECIAL SCHEMES

4.1 Alternative Class Numbers

The Odense Meeting has expressed that "the main tendency' is to reject the LC-System because of its rigidity ... and lack of possibilities for alternate locations" (para 5). On the other hand, it appears to give a high weightage to the provision in UDC for giving Alternative Class Numbers to one and the same subject (para 5). Evidently, the Meeting demands them. This demand for Alternative Class Numbers for one and the same subject is the negation of the Uniqueness of Class Numbers. This negation is due to not realising that a Classificatory Language should be homonym-free and synonym-free. It is also due to failure to establish a syntax for the UDC language. But Otlet had foreseen the need for this. For, Donker Duyvis says "Otlet urged me to develop a grammar and syntax of a "language chiffres" as he called the UDC … I must confess that in the course of the years I had not given the necessary follow-up to his wish" <14). The Postulate of Facet Sequence within a Round (37, 63). and the Wall-Picture Principle (38, 58) constitute a syntax of that kind. CC has adopted that syntax. Its Class Numbers are, therefore, homonym-free and synonym-free.

4.1.1 Result of Alternative Class Numbers

It is rather strange that the provision for Alternative Class Numbers is demanded in spite of the following statement of UDC itself, "The rule of "one-concept one-class" is very rigidly observed in the Main Subject Class" (3). Perhaps another statement in UDC itself has been responsible for this demand; "A few isolated instances may be found in UDC of a dual provision of class for the same subject"; this comes just before the quotation given earlier. One typical way in which the Alternative Class Numbers can be created centres round the Coloned Numbers. Here is the prescription. One way in which two objects or ideas may be related to each other is "by giving two UDC numbers connected by the Colon symbol. These compound UDC Numbers formed with a colon, which indicate a general relationship between the two subjects, thus provide further subdivisions of main subject ... The numbers connected by a colon are to be considered as a subdivision of either by means of the other ... The compound is reversible, since reversal does not materially affect the significance" (2). Then comes the example: The number of "Mathematics adapted to Mining" may be either 51:622 or 622:51. If the first number is said to mean "Mathematics adapted to Mining", on the same analogy the second number should mean "Mining adapted to Mathematics". Thus, the reversal does totally affect the significance. UDC seems to establish a forced synonym in its Classificatory Language by equating two different concepts. Of course, a particular library lay choose one of these alone; but that does not take away the fault of introducing forced synonyms. The UDC also gives, in the next few words, a hint as to what should

be preferred: "Unless special considerations justify reversal, the usual practice is to file under the lower number of the pair". This means that the number occurring earlier in the UDC schedule should be the first member of the coloned number. Even this rule will not always give the same result as the Wall-Picture Principle would give, unless all the Class Numbers stand arranged among themselves according to the Wall-Picture Principle and unless the Isolates in each array of the Schedule of the Isolates likely to occur in each facet have been arranged among themselves according to the Wall-Picture Principle. This brings us back again to the difficulty being caused by what has been referred to by Donker Duyvis — namely, not having established a syntax for UDC language. On the whole, provision for Alternative Class Numbers for the same subject should not be used as an argument in favour of choosing a Scheme for Classification. On the other hand, such a provision should be taken as a disqualification.

4.2 Special Schemes for Classification

Another statement of the Odense Meeting is also open to question. It reads, "As a whole the conclusions are in favour of the UDC system because of its dominating flexibility. That makes possible the formation of alternative schemes for special classification; and this seems to be needed very much" (para 5). Apart from this statement implying the non-recognition of the Class Number of a subject as its proper name and the impropriety of changing it instead of making it unique, the solicitude shown for "Special Classification" is based upon

1 Concern for minority interests; and

2 Failure to explore other ways of serving the minority interests.

4.2.1 Concern for Minority Interests

This concern for the minority interests is a compelling one, The Laws of Library Science emphasise this concern, as it has been already stated in Sec 14. According to the Indian Theory of Classification, there is no conflict between the Concept of the Uniqueness of Class Number and the needs of the several minorities. What appears to be a dilemma can be resolved without sacrificing either of these ideas in one of the following two ways:

1 Invoking the aid of the catalogue; or

2 Invoking the aid of administrative methods.

4.3 Demonstration with a Sample of Nine Subjects

To demonstrate the possibility mentioned in the preceding section, we shall consider the following sample of nine subjects:

G ;3	General physiology	J381 ;93	Physiology of rice plant
Gl1;3	Cell physiology	K ;3	Animal physiology
I;3	Plant physiology	KX,311;3	Physiology of the cow

15 ;3	Physiology of flowering plants	L ;3	Human physiology
		L185;3	Physiology of the eye

Normally, the interest of readers goes by Basic Subjects; specialization is also normally by Basic Subjects; these form the majority of readers — generalists as well as specialists taken together. Therefore, the above-mentioned sequence of the nine subjects will meet the needs of the majority of the readers. The interest of a small minority of specialists may cluster round an Isolate Facet instead of a Basic Facet of a subject, whatever be its distance from the Basic Facet. In the particular sample, let us take the interest of the Physiology Specialist. He would like to have brought to his notice to the satisfaction of Law 4 of Library Science, all the books on Physiology. In other words, he would like to have Physiology as the first facet and Animal, Cell, Cow, Eye, Plant, etc as the respective second facets. For, the isolate Physiology is hidden in the respective Basic Facets in the table given above. The Principle of Uniqueness of Class Number makes a Scheme for Classification to say, *"I* cannot serve two masters — two groups of readers with different interests. I can only serve one group. It is desirable that it is the majority group." The Five Laws of Library Science protest saying, "To us any minority is as important as the majority. Library technique should meet our demand." Classification pleads, "I do not claim to be the only library technique. What I cannot do without causing inconsistency and confusion to readers as they pass from one library to another, I will stick to the Principle of Uniqueness of Class Number and ask the catalogue or the administration to meet your demands." A few more samples are given in the *Prolegomena* (60).

4.4 Help of the Catalogue Through Class Index Entry

In a generalist library, all the books on Physiology can be brought to the notice of the minority of Physiology Specialists by the Class Index Entry, as shown in the following table:

Physiology	Physiology (continued)
Biology G;3	Medicine L;3
Cell Gll;3	Plant I;3
Cow KX,311;3	Rice plant J381;93
Eye, Human L185;3	Zoology K;3
Flowering plants 15 ;3	

No doubt, this will call for more time than having all the books on Physiology together. But life is a compromise; so also the arrangement of books in a library has to be a compromise. The extra time needed by the minority specialists is not much.

4.5 Help of the Catalogue Through Special Index Entry

A generalist library will be used by many different specialists. Law 4 of Library Science can serve all the minorities even better by introducing into the Alphabetical Index of the catalogue a special set of index entries. Each such special set of entries may have as its heading the subject of specialisation concerned. For example, the Alphabetical

Index of the catalogue can give a special set of entries under the term 'Physiology'. The cataloguer has merely to make duplicate copies of the main entries of the subjects having 'Physiology' as a Kernal term — that is, of subjects whose Class Numbers have the digit 3 as the Isolate Number in their Attribute Facets — and insert them behind the term 'Physiology'. Of course, this set of entries will be in a classified sequence which will be found helpful to the Physiology Specialists. When there are specialists in different subjects using a generalist library, this is an effective method of satisfying the needs of the specialists in each of the subjects. P K Garde has told me that such Special Index Entries have worked satisfactorily both in the Ecafe Library in Bangkok, where he was librarian for a number of years, and in the United Nations Library in New York, where he is Chief Reference Librarian.

4.6 Help of the Administration Through Topical Collection

In a generalist library, there will be periodical demand for special collection on a particular topic engaging the temporary attention of the readers at the moment. For example, a course of special lectures by a specialist will create a demand on the university library to build up temporarily a special collection of all the books bearing on the subject of the lectures. This is called 'Topical Collection' (40). Such a Special Collection can be kept together in special book cases or racks until the need for it dies out. I have found this practice very helpful in the Madras University Library. A public library also can do similarly.

4.7 Help of the Administration Through Permanent Special Collection

A specialist library serving only specialists in one subject can arrange the books on that subject permanently as a Special Collection. For example, all the books with 'Physiology' as a kernal term in its title — that is, with Call Numbers having the digit 3 in the Matter (property) Facet — may be separated put from the other books and arranged among themselves according to their Class Numbers. This permanent Special Collection may be put at the very beginning of the stack room. All other subjects may follow later in the classified sequence. This will give supreme satisfaction to all the Laws of Library Science — particularly to Law 4.

4.8 Documentation List

In a classified documentation list — such as abstracting periodical, indexing periodical, and *ad hoc* list — a similar method can be followed. If it is for general purposes, Special Index Entries can be added to the Alphabetical Part of the documentation list. On the other hand, if it is for the use of the specialists in a single subject, the analogy of the method described in the preceding section may be followed.

5 SEQUENCE OF COMPOUND SUBJECTS

5.1 Immensity of Total Number

We shall restrict this section to the consideration of the sequence of Compound Subjects in the Universe of the Subjects having literary warrant today, either with

independent embodiment as books or as articles in periodicals or as sections of books. Their number runs to more than a million. The number of possible sequences will be: Factorial of the number of Compound Subjects — a fabulously big number. In any Scheme for Classification, these are first broken down to a few hundreds of Basic Subjects. The sequence of Main Subjects has been considered in Sec 2. Further, the sequence of the canonical divisions of each Main Subject is generally an accepted one. Thus, the problem of the Sequence of Compound Subjects in the Universe of Subjects at large is reduced to that of the Sequence of Compound Subjects going with a single Basic Subject. If we assume the number of Basic Subjects to be 200, the reduction is to 1/200. Even then, the number of Compound Subjects is too large to be settled at the phenomenal level of the Compound Subjects.

5.1.1 Reduction in the Idea Plane

The magnitude of the problem should be reduced still further. One approach will be

1. To determine a helpful sequence among the Isolate Ideas in each schedule of Common Isolates. The greater the number of schedules of Common Isolates, the greater will be the reduction in the magnitude of the problem;

2. To determine a helpful sequence among the Isolate Ideas in each of the schedules of the Special Isolates likely to be found in the set of Compound Subjects going respectively with each of the Basic Subjects. The greater the number of schedules of such Special Isolates, the greater will be the reduction in the magnitude of the problem; and

3. To determine a helpful uniform pattern for the sequence among the facets of a Compound Subject. The more uniform the pattern of this sequence, the greater will be the reduction in the magnitude of the problem.

5.1.2 Reduction in the Notational Plane

The benefit derived from the approach suggested for the Idea Plane can be exploited fully if and only if

1. The Notational System of the scheme has got the necessary versatility to implement each one of the findings in the Idea Plane; and

2 . The digits in the Notational System are invested with scheduled, systematic, and seminal mnemonic values. The more extensive the mnemonic system, the more easy will be the implementation of the findings of the Idea Plane.

5.2 Decimal Classification

5.2.1 Regression

Unfortunately, the present editors of DC have taken a regressive step. They have started off on the assumption that there is an irresolvable conflict between "shelf

classification" and "bibliographical classification" and that one and the same scheme cannot serve both the purposes. As a result, DC is making a steady regression from the position reached in Ed 14 (1942). Here is a categorical statement of policy. "The latest (16th) full edition of DC was prepared as a shelf classification which could meet the needs of general libraries of any size (?), though not necessarily those of special libraries … it is not intended to be used for deep bibliographical analysis, nor is it built on the framework of philosophical theories" (7).

5.2.2 Absence of Guiding Principles

The designer of DC had been endowed with considerable intuition and flair. Therefore, with the experience of the subjects embodied in books in his days, he had arranged the Compound Subjects going with each of the Basic Subjects in a helpful sequence. He had done so subjectively without the help of objective principles. Therefore, there are more faults in their sequence than would have been otherwise. The present editors also continue to depend on flair. When the flair is of a lower order than that of the original designer, the number of spots of unhelpful sequence naturally increases. Too much of dependence on mere flair is really precarious.

5.2.3 Fetish of Pure Notation

A fetish is made of the pure Notational System using only Indo-Arabic numerals. The result is that the average length of a Class Number is one more than will be possible with a Mixed Notational System *(See* Sec 17). In particular, there is unwillingness to use a different set of digits as Connecting Digits between facets, though the facet idea is to be found implicit in some of the Class Numbers. The result of this has been pointed out by the Odense Meeting in the following words: "Formation of pure decimal numbers by means of auxiliaries and parallel divisions hides the implicit complexity of Compound Numbers (that is, the Faceted Numbers) in a way which makes the use of it more difficult and less efficient than the explicit complexity (= Facet Formation) of UDC" (para 5). The editors ignore the following words written by the designer of DC himself in 1926:

> "IIB (UDC) has devized and uzes injenius simbols, expressing many interrelations and greatly increasing numbering capacity. But these new simbols ar tho't by any too complex for ordinary shelf or catalog use. Tho 25 years use by IIB with unskilled clerks has proved that this objection is more fear than result of fair tryal ... Obviously these simbols allow subdivision of the same number in many different ways, without confuzion. The most important of these devices are 3 Relation Syn and 6 place syn and their use in libraries where they have been tryd has proved that it is entirely practicabl, even for marking books" (9).

5.2.4 "Hit or Miss"

The practical work of classifying becomes a matter of hit or miss. This is because, as already stated, there are no guiding principles to help the classifier in analysing a Compound Subject and locating its place in the schedule with ease. In the paper for Practical Classification in the Degree Examination in Library Science, some of the

universities have experimented by giving about 20 titles for classification and asking the students

1. *either* to classify all the 20 titles by CC or DC;
2. *or* to classify only 10 titles by both DC and CC. Almost all the candidates have chosen, year after year, the second alternative. The explanation given by them is of interest. It is in effect, "In DC, we have no guidance in formulating the subject precisely. On the other hand, in CC, its facet approach gives ample help. Therefore, we work out the CC Numbers for ten titles. Then it is only a question of translating the CC Numbers into DC Numbers. This give us much time to do the CC Numbers with great care and to verify all the Class Numbers — CC as well as DC — thoroughly before submitting the answer papers." This throws some light on what the new generation of librarians would prefer to have, though the old generation may as usual be too conservative to change over.

5.3 Universal Decimal Classification

5.3.1 DC Core

The UDC has considerably improved on DC, though it has unfortunately attached itself to the DC core upto three or four digits and therefore carries with it all the consequential drawbacks.

5.3.2 Synonymous Class Numbers

UDC allows synonyms among Class Numbers *(See* Sec 41 and 411).

5.3.3 Inadequacy in Facet Analysis

UDC has not gone sufficiently far in facet analysis. The same schedule has to serve for all possible Common and Special Isolates, other than those for Anteriorising Common Isolates, Time Isolates, and Space Isolates.

5.3.4 Inadequacy of Colon Device

The device of the Colon Relation produces homonyms among Class Numbers. This defect has been clearly seen by Donker Duyvis. According to him, "The passive and active relationships (between two classes) need also expression by some symbol ...

" 1 Wood-painting by spray ... might be expressed by 674:.667.666 in which 674 wood is the passive object of 667.666 being the paint spraying operation; whereas

"2 Mutual relation of two active reagents might be expressed by : : ; and

"3 Mutual passivity by :.." (14).

This suggestion of Donker Duyvis has not yet been followed up by the UDC Committee. It is necessary that it should do so.

5.3.5 No Consistency in Pattern of Arrangement

The pattern of arrangement of the Compound Subjects going with the different Basic Subjects is not reasonably uniform. Donker Duyvis has been conscious of this. For, he has stated, "hundreds of experts have developed and improved it (UDC) in detail; but (therefore?) a certain lack of consistency has occurred." There are four reasons for this

1. To my knowledge, the experts mentioned by Donker Duyvis are experts in their respective subject fields. In the Committees, whose work I happened to watch, either there was no expert in the theory and design of classification; or no such expert present exerted much influence. Perhaps, there is now a trend to remove this defect;

2. In fact, the fixing of the position of an isolate in a schedule of isolates and of the sequence of facets in a Compound Subject has been done largely subjectively and by flair. I have even seen a vote being taken on this issue, as it were a matter of mere opinion, which could not be objectively determined on the basis of accepted principles;

3. Most of the principles given for guidance by the General Committee of UDC are procedural rather than substantive, though of course the need for substantive guiding principles is now being slowly realised; and

4. The "Starvation System" described in Sec 384 illustrates the poverty in the helpful principles needed for guiding the work in the Idea Plane.

5.3.6 Faith in a Single Classification

However, the UDC accepts the possibility and practicability of one and the same scheme serving "shelf arrangement" and "bibliographical arrangement". It is a great improvement on DC — indeed on any other of the then known schemes.

5.3.7 Difference Between Array and Chain

One valuable observation of the Odense Meeting is, "The most effective way is to extend relations, rather than reconsidering or extending the hierarchy" (Para 12). This amounts to saying rather obliquely that a faceted scheme is better than a monolithic scheme. However, the way in which it is stated discloses the absence of a conscious comprehension of the difference between an Array of Coordinate Classes and a Chain of Subordinate Classes. Is this lack of understanding common among those developing and practising UDC? I wish it were not so.

5.3.8 Goody but Room for Improvement

Acceptance of Facetisation, of Octave Notation, and of a new species of digits for connecting facets makes UDC capable of yielding Co-extensive and Expressive Class Numbers. On the whole, the helpfulness of the sequence of the Compound Subjects, going with any Basic Subject provided by UDC, is reasonable. But it does suffer occasionally because

of the faults mentioned in the four categories mentioned in Sec 535. Perhaps it would be appropriate to repeat here a common expression found in testimonials: "Progress is good. But there is room for improvement."

5.4 Library of Congress Classification

The Library of Congress Classification is basically a scheme designed by a Committee. It has been developed by several persons, though in consultation with one another. No set of guiding principles used by them in designing the Sequence of Compound Subjects appears to have been mentioned. Nor is it possible to infer any such principle to be implied in the schedule. Further, no set of guiding principles has been stated for the choice of particular Class Numbers and for the width of the gaps left between two consecutive Class Numbers. It appears to be of subjective work. Subjective work may yield reasonable results if this is done by a single person. When the results of the subjective opinions and of the flair of many persons are mixed up, the result is not helpful. LC has got an unusual opportunity of having all the possible books to be looked into by them and experimented upon for their helpful arrangement. The unfortunate defect of its integral notation has been discussed very often. E C Richardson had expressed an admirable wish. He has said, "One could wish that the official Dewey System would adopt the Library of Congress outlines and apply the Decimal Notation and index to them, forming a new LC-DC which could be applied or translated automatically into or out of LC Notation" The Odense Meeting does not recommend the adoption of LC. It goes further to endorse the following statement of Perreault: "Do not join the general movement towards reclassification from DC to LC ... Prefer UDC to LC" (Para 10). The Odense Meeting further adds, "For the moment, Perreault might be a man who shouts in the desert; but nevertheless there is a potential background for such a proposal which cannot be neglected. The elements of hide and seek is far more tantalising in LC than in DC."

5.5 Colon Classification

5.5.1 Formulation of Guiding Principles and Postulates

CC has the benefit of having been designed more than quarter of a century after LC and UDC and nearly half a century after DC. In a sense it can be said to stand on the shoulders of all its predecessors — DC, EC, LC, SC, and UDC. Its design was provoked by the inadequacy of DC to meet the state of the Universe of Subjects in 1924. This inadequacy was sensed in the latter half of 1924 during the process of classifying current books by DC as an exercise while studying in the School of Librarianship of the University of London. The inadequacy was also more extensively experienced while critically examining the printed classified catalogue of the Carnegie Library of Pittsburgh and of the Glasgow Public Library System, copies of which were available in the Library of the School of Librarianship. Unfortunately, no other Schemes for Classification were then looked into. Perhaps it was fortunate. For, the other schemes might have distracted the thought as it has been guessed later. The inadequacy of DC led to the conviction that the foundations of DC were not adequate. An alternative foundation was, there-fore, felt to be necessary. To use the modern terminology and idea which were not then in existence, the conviction came that an Enumerative Classification was inadequate and that a Freely

Faceted Classification was necessary. It was developed for about ten years using the Madras University Library as an observatory and a laboratory — it may be stated here without any hindrance to the service which had to be given to the public. Thereafter, an intensive comparative study of most of the schemes was done in 1935 and 1936. This resulted in the *Prolegomena to library classification* (1937). Since then work has been going on continuously in developing side by side CC as well as the Theory of Classification. The result is the establishment of a series of objective guiding principles and postulates for designing a Scheme for Classification. The principles and postulates formulated for work in the Idea Plane are universally valid and applicable to all schemes. In the few places where CC is found to be going astray it is brought into conformity with these principles and postulates. The versatility of the Notational System, which was already great, is being increased continuously.

5.5.2 Descent Towards the Seminal Level

In regard to the arrangement of the Compound Subjects going with a Basic Subject, the approach of CC has been described as follows:

In the phenomenal world there are millions and millions of subjects. We do not know which of the Immediate Neighbourhood Relations should be kept Invariant in arranging the subjects in a helpful way along a line. A suitable method would be to descend from the phenomenal level nearer and nearer to the seminal level. As we descend, a number of these subjects get absorbed into a single one. This reduction in the number of subjects is a help. Let us go deeper, until the number is reduced to about ten. Can we manage ten? Even then, there are about three million problems of Invariants to be solved. In other words, there are about three million ways of arranging them — 3,623,800 ways, to be exact. Let us, therefore, go still further down. If we reach the seminal bottom, there will be nothing but one and there will be no challenge of arrangement at all. Monism is abhorrent to the intellect, however natural it may be to intuition. We must avoid that extreme; we must stop short of the ultimate; but at what level ? We may try put various levels and find out which one is comfortable. This is very difficult to do; it may take a lifetime to try out all levels, even the most promising levels. In the view of the Postulate of Fundamental Categories, we should descend down and down, and down and down, and allow the various subjects and ideas to become absorbed and reassembled, reabsorbed and again reassembled, and so on; until we find only five ultimate generic ideas — seminal ideas — standing out. We shall call these five ultimate generic ideas the 'Five Fundamental Categories' (35). These are Personality, Matter, Energy, Space, Time — PMEST. This led to the Postulate of Fundamental Categories and other associated postulates. These were backed by the Principles for Facet Sequence and Principles for Sequence of Isolates in an Array. These principles are mostly corollaries of the master principle known as the Wall-Picture Principle (59). If we facet-analyse and construct the Class Number of each subject in a systematic way on the basis of these postulates and principles (39, 64), the sequence into which the resulting Class Numbers arrange the subjects is found to be helpful — helpful to the majority of readers. The result of CC placing itself entirely in the hands of the postulates and guiding principles is that it ignores the wood of the Universe of Subjects and attends only to the individual subjects

with the certitude that the Universe of Subjects too would have been thereby attended to automatically.

5.5.3 Comparison of CC and UDC

CC can be compared only with UDC. It is like UDC in that it is a Faceted Scheme. But it differs from UDC in the following respects:

1. CC is a Freely Faceted Classification, whereas UDC is only a Nearly Faceted Classification;
2. CC starts with a short schedule of Basic Classes, whereas UDC has not yet escaped from the grip of the rigid DC core and giving a Schedule of Compound Classes running to several hundred pages;
3. CC is guided by definite objectively applicable principles and the need for flair is reduced to an enormous extent, whereas UDC still depends a good deal on subjective decisions instead of objective ones based on stated principles;
4. CC has the advantage of six schedules of Common Isolates and of several Special Isolates for the Compound Subjects going with the respective Basic Subjects, whereas UDC has only three distinctive schedules of Common Isolates and its Schedules of Special Isolates are far too few and they very much mix up different kinds of isolates;
5. CC has made full use of the advantages of a Mixed Notation, whereas UDC is still essentially in the grip of Indo-Arabic numerals;
6. In CC, the sequence of the isolates in a schedule, the sequence of facets in a Compound Subject, and the sequence of the Compound Subjects going with the respective Basic Subjects conform much more to a common pattern than the subjects of UDC do;
7. The Canonical Subjects of CC include the various Systems of Development of each Basic Subject and also the Specials going with each Basic Subject. This feature is rarely found in UDC; and
8. On account of the large base of its Notational System and provision for any number of facets that may be determined by the Idea Plane, the average number of digits in CC numbers is smaller by 50 per cent than the average number of digits in a UDC Number (66). CC appears to be preferable to UDC. The members of the Odense Meeting have had no experience in working with CC. That is why they have not considered it.

6 PLACES FOR NEW SUBJECTS

6.1 Distinction Between Macro Subject and Micro Subject

It is helpful to distinguish between a Macro Subject and a Micro Subject. Till the end of the nineteenth century, the designers of classification have been confining themselves to Macro Subjects — that is, subjects whose extension is large enough to need an

independent book for exposition. It is only during the twentieth century that the designers of classification have extended their interest to Micro Subjects — that is, subjects whose extension is too small to warrant a separate book for exposition and admits of exposition in an article in a periodical or in a section of a book. The extension of classification to Micro Subjects was intensified after World War II. In fact, the focus of interest of the classificationists and the classifiers has now been definitely shifted to the realm of Micro Subjects.

6.1.1 Emergence of New Basic Subjects

From the very beginning, new Basic Subjects have been emerging. But the rate of emergence was very slow. Their number has grown from only four in the Vedic times to about 200 today. Therefore, the reception of a new Basic Subject in a helpful place amidst the sequence of the already existing Basic Subjects has not been difficult. Its helpful place was easily determined by mere flair. Its Class Number too was easily fixed.

6.1.2 Emergence of New Compound Macro Subjects

The urge to include Compound Macro Subjects in a Scheme for Classification developed to a considerable extent only in the nineteenth century. The rate of emergence of new Compound Macro Subjects was small. In the Idea Plane, it has been possible both to arrange them in a helpful sequence and to find a helpful place in that sequence for a new arrival, with sheer flair, unaided by any objective guiding principles. In the Notational Plane, the Decimal Fraction Notation made it possible to construct Class Numbers both for the already existing subjects and for new arrivals, so as to implement the sequence determined by the Idea Plane, though not in an ideal way. From about the beginning of the twentieth century and particularly today, Micro Subjects are being steadily promoted to the status of Micro subjects — in other words, they come to be embodied in independent books. When I entered the library profession in 1924, I saw the result of this steady promotion. The number of Compound Macro Subjects began to increase at a rapid rate. DC was overpowered. Its foundations were found to be inadequate.

6.1.3 Emergence of New Micro Subjects

About the turn of the twentieth century, the practice of including Micro Subjects also in the Universe of Subjects to be classified began to take shape. This practice steadily gained in importance after World War I. After World War II, it may be said that their inclusion in the Universe of Subjects to be classified is recognised to be a social necessity. It is necessary for libraries to feed the research workers with the documents embodying new nascent Micro Subjects just in the wavefront of knowledge. This, in its turn, is necessary to conserve the research potential of the world without its being dissipated in unwanted and unintended repetition of investigations of Micro Subjects already investigated and embodied in documents. We are concerned here with the

consequent increase in the rate of emergence of new Compound Subjects in the Universe of Subjects. The average rate is perhaps as much as three per day.

6.1.4 Effect of High Rate of Emergence

The high rate of emergence of new subjects throws a challenge to the classificationist. To begin with, the challenge is in the Idea Plane. The problem is to find a helpful place in the sequence of the already existing millions of subjects, for a thousand new subjects emerging each year. Surely, mere flair cannot meet this challenge. Not even the greatest amount of intuition available among the intellectuals can meet this challenge. The notational system, devised by mere flair or even some slight intuition with the limited experience of the nineteenth century, cannot have the versatility necessary to implement the findings of the Idea Plane. The inadequacy of mere flair and slight intuition to meet the tremendous onslaught created by the increasing turbulence of the Universe of Subjects cannot any longer be overlooked.

6.1.5 Challenge to the Intellect

The challenge created by the high rate of emergence of subjects can only be met intellectually. In the Idea Plane, we come back to what has already been stated more than once. The work in the Idea Plane should be guided objectively by helpful postulates and principles. The versatility of the Notational Plane will also have to be steadily increased objectively with the help of a mechanism or device available for use. In this, the province for flair and intuition lies largely in the formulation of postulates and principles for the Idea Plane and their steady improvement. In the Notational Plane, their province is restricted to hitting upon new devices for increasing the versatility of the Notational Plane.

The result of the turbulent proliferations in the Universe of Subjects is that we want, in reality, a self-perpetuating Scheme for Classification. The self-perpetuation should be possible at least for a few generations, before need arises for changing over to another scheme with a greater power for self-perpetuation and basically more in keeping with the then state of the Universe of Subjects. This implies that there should be a steady growth in the Scheme for Classification.

6.1.6 Static Stability

It may also happen that newly emerging subjects throw new light in regard to helpfulness of sequence among the older subjects. This may lead to rearrangement of subjects, to the assignment of new Class Numbers to some subjects, and to the promotion of some Compound Subjects to the status of a Basic Subject as it is happening today in the case of new inter-disciplinary eruptions, such as Biophysics, Biochemistry, and Geophysics. Even those who deny the need for a scheme for the depth classification of Micro Subjects, such as the one needed in documentation work, should not get away with the impression that they can preserve their schemes for the classification even of books alone free from change. For, they should remember that the promotion of the Micro Subjects of today to the status of a Macro Subject of tomorrow is now becoming more frequent than in the first half of the present century. The books embodying Macro Subjects, created by such a promotion from time to time, cannot always be given their proper places and their

corresponding Class Numbers without some change in the already existing Class Numbers. They should remember that the stability of a Scheme for Classification should not be taken to be a static one. This is brought out by the Odense Meeting in the following statement: "When we talk of stability in connection with Universal Classification Systems, like UDC, DC, and LC, we do not mean static stability" (Para 11).

6.1.7 Dynamic Stability

The right attitude is expressed in the wise epigram of A N Whitehead, "The art of progress is to preserve order amid change and to preserve change amid order" (80). The Odense Meeting bases itself on this epigram and emphasises that the stability of a Scheme for Classification should be described as "dynamic equilibrium" (Para 11). The dynamic quality of the equilibrium should not, however, be taken to include all-out kaleidoscopic change. Any change should not exceed minor adjustments here and there, within a small range of the overall sequence of the subjects. Changes which involve only a change in some digit — say, Connecting Digit — without involving change of place for the subject represented should also be possible. The inner mechanism should also include the method for introducing new Basic Subjects coming up as new inter-disciplinary eruptions, such as those mentioned in Sec 616.

6.1.8 Additions to Dimensions

One feature of the growth in the Universe of Subjects, calling for a similar growth in a Scheme for Classification, has been stated as follows by Donker Duyvis: "The brand of development of a "Depth Classification", as our friend Ranganathan has called it, is a further evolution of multidimensional classification. CC and UDC are to my knowledge the two universal classifications in existence which show the multidimensional approach" (13). In a Faceted Classification, the number of dimensions of the Universe of Basic Subjects is equal to the order of the Basic Subject with the highest order. The number of dimensions of an Isolate Idea is the number of characteristics used in arriving at it. The number of dimensions of the Universe of Isolate Ideas is the number of dimensions of the Isolate Idea with the largest number of dimensions. The number of the facet-dimensions of a Compound Subject is the number of its facets. The number of facet-dimensions of the Universe of Compound Subjects is the number of facet-dimensions of the Compound Subject with the largest number of facet-dimensions.

The number of dimensions of a Compound Subject is the sum of the number of dimensions of each of its facets. The number of dimensions of the Universe of Compound Subjects is the number of dimensions of the Compound Subjects with the largest number of dimensions. If we define "dimension" correctly in this way, the statement of Donker Duyyis really reflects the degrees of Hospitality in Chain and Hospitality in Facet.

6.2 Decimal Classification

Judged by the requirements of "dynamic equilibrium", PC fails to be a useful Scheme for Classification. It has virtually turned its back to the problem arising from the

frequent promotion of Micro Subjects to the status of a Macro Subject. Therefore, it has not provided any inner mechanism either in the Idea Plane or in the Notational Plane for absorbing such newly emerging Macro Subjects. It does not have a multidimensional approach. For, it has no provision for full Hospitality in Array or in Chain or for Hospitality in Facets. In fact, all the facets of a subject except the last one are frozen and are closely packed. Further, it has often to rearrange the Compound Subjects, involving kaleidoscopic change. For, nearly a hundred Compound Subjects had to be pulled out from the Basic Subjects with which they had been put in the earlier years, and to be transplanted among the Compound Subjects going with some other Basic Subjects. During the last 15 years, about 150 such transplantations have been made. Migrations of subjects within the Compound Subjects going with one and the same Basic Subject have been much more numerous; it is about 2,300. Some of these are not migrations within a short range. Its restricted Notational System also disables it to give appropriate Class Numbers to the new subjects, even assuming that they can be found their places by the Idea Plane.

6.3 Universal Decimal Classification

The sponsors of UDC have planned for "dynamic equilibrium" in its development. However, the following statement of the Odense Meeting is significant: "As far as UDC is concerned, we are facing the radical revision program without any firm conviction that a dynamic equilibrium can be upheld under such conditions" (Para 11). They further add that there is "uncertainty as regards the reliability of the system as an international standard. Furthermore, it must be useful ... if ways and means could be found for maintaining the necessary state of dynamic equilibrium without changing the very main structure of the system" (Para 11). Perhaps, by "main structure of the system" is meant either its DC core or the sequence of its Basic Subjects. If so, it is doubtful whether it would be possible. To secure the "ways and means", its main Notational System should be taken away from the grip of the pure Notational System of DC. The base of its Notational System should be lengthened considerably. It has already adopted my suggestion for the use of the Octave Device, now called the Sector Device, to provide for extrapolation (63). But this is not sufficient. The admission of other species of digits into the base and the application of the Sector Device to each of them are necessary to increase the Hospitality in Array to the necessary extent. It should also provide interpolating device in the Notational Plane. Further, it should put up objective principles for work in the Idea Plane. Unless an inner mechanism is provided for "increasing the dimensions", as mentioned by Donker Duyvis, UDC will not be able to meet, for long, the onslaught of the newly emerging Macro Subjects — and still less of Micro Subjects. It should provide for Hospitality in Facets.

6.4 Library of Congress Classification

In maintaining "dynamic equilibrium" LC has all the handicap due to the absence of the inner mechanism in the Idea Plane and in the Notational Plane to accommodate in an objective way newly emerging subjects at helpful places in the sequence of the already existing subjects. Its integral Notational System is the greatest handicap.

6.5 Colon Classification

The very foundation of CC makes it eminently fit for "dynamic equilibrium". This equilibrium in CC is based on isolates being deemed to be manifestations of the five Fundamental Categories of the near-seminal level. This enables CC to accommodate newly emerging subjects at helpful places in the sequence of the already existing subjects and to fit them with appropriate Unique Class Numbers. It has an objective inner mechanism in the Idea Plane. This mechanism utilises the postulates and the principles furnished by the Theory of Classification for use by all Schemes for Classification. The inner mechanism includes also a method for introducing new Canonical Subjects such as those mentioned in Sec 616. The inner mechanism in the Notational Plane centres round Empty Digits, Emptying Digits, and Empty and Emptying Digits. It also includes three varieties of mnemonic system of an advanced kind. Any change needed, as time goes on, involves only slight local adjustments or nutations and not wholesale shape-up, bringing out a new kaleidoscopic pattern. Till now most of the changes involved are only change in Connecting Digit and change in a few Array Isolate Numbers, apart from addition of new facets, extrapolation and interpolation in arrays, and lengthening of chains; these two latter changes do not involve any change in the position of the already existing subjects. However, it is expected that when a new Basic Subject of the variety of inter-disciplinary eruption has to be introduced, the change of position will be considerable, but not too considerable. However, from the nature of the case, the number of documents in such a new Basic Subject will not be large at the time of its formation. We shall next say a word about the capacity of the notational system of CC — that is, the maximum number of subjects it can accommodate. In estimating this capacity we shall, for convenience, regard a superimposed isolate with two components as two facets, one with three components as three facets, and so on. Basing our experience gained till now with micro subjects we shall take the likely maximum number of facets to be ten. Then, with its base of 56 digits, the maximum number of subjects for which CC can provide distinctive Class Numbers is 3.3×10^{52}. With the same assumptions, the maximum number of subjects for which UDC can provide distinctive Class Numbers is 1.4×10^{26}; this is due to the number of digits in its base being only 9.

6.6 Overdoing the Input Work

The report of the Odense Meeting contains the following statement: "According to Torkil Olsen, the libraries in general use too much man-power and too many working hours in maintaining detailed systematic catalogs which are very often not effectively used; he would prefer not to overdo the input work, but establish a quick and economic clear-cut framework for shelving and filing, which also enables abbreviated class numbers to be used on book-labels for an "open access" collection comprising a few hundred thousand volumes" (Para 7). Three points should be made against this statement:

1. This means that it is sufficient to use short Class Numbers for shelving purposes. This has been controverted in Sec 382;

2. In a properly designed Freely Faceted Classification, with as large a base as possible for its Notational System, it is a matter of experience that the books do not get long Class Numbers *(See* Sec 16);

3. In the case of a documentation list or in the case of a catalogue-of micro documents, the time taken for input should be weighed carefully against the time taken for output. The input work is done entirely by the catalogue staff; and once it is done, it is done for ever. Work at the output stage occupies the time of the reference staff as well as the reader. The time taken at this stage will have to be repeated every time a new reader comes. Therefore, this time should be multiplied by *n* which will go on growing. It is *n* times the output time that should be weighed against the input time. Again, the time of the specialist reader is very precious. This too should be remembered and given due weightage.

6.7 Impact of Electronics

6.7.1 Advent of Computers for Retrieval Work

As conjectured in Sec 613, about 1,000 new subjects emerge every year; the total number of subjects is growing by leaps and bounds; social necessity has arisen to organise the millions of Micro Subjects, so as to make retrieval easy. Since World War II, Electronic Engineering has entered the field of retrieval of Micro Documents. Increasingly sophisticated computers are being designed for retrieval work. The claim is that the retrieval work will be done quickly if not instantaneously. At present, the library profession also believes in it. It is evidently carried away by the marvel that is promised.

6.7.2 Needs of the Reader

In reality, however, after the reader comes with his requirement, much of the retrieval time is taken up in formulating in exact terms the requirements of the reader. Each facet of his subject should be identified and the correct focus in each facet has also to be ascertained. In this process we soon reach a stage when the reader is helped considerably in formulating his present requirement, if he can see fanned out before him a consecutive set of call number entries (that is, subject entries) arranged in a helpful sequence. Till he sees them, he finds it difficult to say precisely what he wants, even as a lady finds it difficult to mention precisely the colour of the saree (lady's wear) she wants until she sees spread out before her sarees of several colours in a helpful way. In the conventional retrieval — the classified catalogue — everything is ready for the reader. The reference librarian has only to show him that region of the classified catalogue, which he could ascertain from the reader by a few words. Then the helpful sequence of the entries does the work for the reader. The computer can be of help to the reader in this way if it too-can throw before him a similar helpful sequence of such entries.

6.7.3 Comparison of Cost

To throw out a helpful sequence of all the relevent main and cross reference entries, the entries should have been fed into the memory of the computer along with the

Call Numbers. The input time and man-power are thus the same both for the conventional catalogue and the computer, in so far as Classification is concerned. For, Classification requires judgement of too complex a nature for the computer and it has to be done only by a human being. The difference in time and cost will be only between that of writing the catalogue entries in cards on the one hand and that of feeding them into the memory of the computer on the other. In comparing the total cost of these two pieces of work, we should allow for interest on capital and depreciation; we should also build up experience with the computerised catalogue having the full sophistication needed for the purpose. Perhaps we are not yet ready for it.

6.7.4 Choice of Scheme for Classification to Feed the Computer

Assuming that we shall soon be ready for it and also that the "real overall cost" of the computerised catalogue will not be more than that of the conventional catalogue, we shall be merely transferring persons from Library Work to Hardware Work. Further, we should still remember that the computer also needs the kind of depth classification that is necessary for the use of the conventional catalogue. Thus, in any case, classification should be developed so as to provide a Unique Class Number to accommodate every new subject in its correct helpful place in the sequence of the already existing subjects; and only a Scheme for Classification with such a quality should be chosen.

6.7.5 Finding of Odense Meeting

The following statement of the Odense Meeting agrees with this view: "Whether the said framework (classification) might be complemented by a retrieval tool in the form of a depth classified catalog or a subject-heading index (thesaurus) is to be left to the future. The computer does not hesitate in asking directions at each street-comer" (Para 7).

7 PERMANENT ORGANISATION FOR DEVELOPMENT

7.0 Need for Permanent Organisation

The Universe of Subjects is ever growing. It is ever forming new patterns. It now and again transcends the capacity of the postulates and principles formulated for the Idea Plane and the degree of versatility fitted into the Notational Plane. No Scheme for Classification can therefore continue to be of help, unless it is propped up from time to time — occasionally even in unanticipated ways. There must be a permanent organisation for developing it continuously and even metamorphosing it whenever necessary. The organisation should not be conservative; it should not be regressive; it should always be prepared to look forward rather than merely backwards. It should absorb all new ideas on the design of classification from whatever source-they emanate. This factor also should be taken into consideration, in the choice of a Scheme for Classification.

7.1 Decimal Classification

The shrewd designer of DC had established the Lake Placid Club to look after its future development. It is still going strong. He had also realised that a vast growing

library was a necessary laboratory for developing a Scheme for Classification. He had accordingly been endeavouring to link DC with the Library of Congress. He is said to have declared, "When I see the DC numbers on the LC Cards, I shall be ready for the *nunc dimitis"* (8). The appearance of the DC number on the LC cards approached reality in 1930; and he died in 1932. This, reminds us of Bhishma of the Indian tradition choosing his own time to pass over. The DC organisation is active in propagating the use of DC. But unfortunately it is regressive. It is not taking advantage of the latest developments in the theory of library classification and evolving it into an omnipotent scheme which it can become. As Palmer says, "Classificatory science has made tremendous strides forward, bringing forth new methods of analysis, and new ways of displaying them. Yet, DC has continued in its old ways and is rapidly losing the respect with which at one time it was wont to be hailed" (24). The policy of regression in Ed 16 onwards has made the situation worse. This is particularly unfortunate, because on account of its pioneership and existence through nearly a century, it is influencing thousands, of libraries and librarians and nearly mesmerising them — and, shall we add, inhibiting them.

7.2 Library of Congress Classification

LC was born "with a silver-spoon in the mouth" as the saying goes. It is the baby of the vast, ever-growing national library of the land of libraries — the Library of Congress. The Committee appointed by Putnam to choose a Scheme for Classification for the Library of Congress decided to use the layout of EC. Unfortunately, Charles Cutter died soon after this decision. Martel planned to use two letters for the main divisions and decimal fractions for the subdivisions. But A R Spofford, the former librarian who still continued on the staff as an assistant, bitterly opposed the inclusion of any decimal notation! He carried his point; and the rigid integral notation came to spoil what would otherwise have been the best scheme in existence, backed by all the prestige, man-power, and resource of the most library-minded government in the world. This catastrophe is-traceable to a well-known human frailty — personal animosity.

If LC moves with the times and absorbs into itself all the benefits of the growing theory of classification made necessary by the ever-increasing turbulence of the Universe of Subjects and changes its notational system, the organisation for its development could produce the best result *(See* Sec 54).

7.3 Universal Decimal Classification

The persistence of the two Belgians who converted DC into UDC secured the support of the Belgian Government. It has now the further support of the Dutch Government and of Unesco. Its development is in the capable hands of the International Federation for Documentation (FID). The great care with which FID fosters it and the great support flowing towards it from many national organisations and international subject organisations are remarkable. Indeed, they are unprecedented. The UDC Committee of the FID is not altogether irresponsive to the gradual development in the theory of

classification. On account of its obligation to give weight to all its supporters, it is not able to change fast enough. And yet it has accepted the Octave Notation. It is not averse to developing its Faceted Notation still further. It is brave in breaking away from its parent DC in nearly two-thirds of the subdivisions from the fourth order subdivisions onwards, according to the estimate of Donker Duyvis (11). But it is still unable to make its decision in the idea plane on the basis of objective principles of a fundamental nature. Nor is it able to shake off totally its adherence to the pure notational system of Indo-Arabic numerals and to enlarge the base of its notational system so as to make its Notational System as versatile as the incessant proliferations in the Universe of Subjects demand. Perhaps it will in due course in spite of its resulting in a complete metamorphosis — towards CC. When it does, the great influence and good-will enjoyed by it can be turned to a progressive purpose. The sooner this happens, the better it will be for the efficiency of library service, particularly of documentation service.

7.4 Bibliographic Classification

The designer of BC did not get much support from his own country, to *a letter of* his, written in 1936, he complained to me bitterly about this. Curiously even the support he managed to secure from his British friends was not received in good spirit by some of his countrymen. However UK has now a Bliss Bibliographic Classification Committee in consultation with H W Wilson and Co of New York. The Committee publishes an annual *Bulletin* which contains amendments and extensions to and commentaries on BC during the year.

7.5 Colon Classification

With regard to a permanent organisation for future development, CC is in the same plight as BC. Here is an account of the past attempts and of the future hopes in this matter.

7.5.1 Madras Library Association

In 1939, the Madras Library Association started its annual *Memoirs.* The intension was to give an Annexure in each annual volume giving an account of the additions and changes made in CC during the year. It was also intended that librarians should be invited to state in its pages the problems they had come across during the year. World War II started; and the *Memoirs* had to be discontinued after three issues. In 1945, I had to leave Madras to work in North India. Thus ended the first attempt.

7.5.2 University of Delhi

In 1947, I joined the University of Delhi. Sir Maurice Gwyer, its then Vice-Chancellor, had great ambitions for that University. He wanted that it should be the home of all All-India Learned Bodies. In particular, he was keen that it should develop Library Science in full measure. For this purpose, he told me that he was endeavouring to establish a Regius Professorship in Library Science in the University. He was soliciting help for this from some of the Indian princes and business magnates. But when these things were

only in the stage of negotiation, the absorption of the Indian States into the Indian Union was set on foot. Therefore, no further progress was possible. Sir Maurice had told me quite often that one of the functions of the Department of Library Science with the Regius Professor at its head would be to have full charge of the future development of CC.

7.5.3 *Insdoc*

In 1950, Sir S S Bhatnagar, Sir K S Krishnan, and myself promoted the establishment of the Insdoc. Sir S S Bhatnagar was the Director-General of the Council of Scientific and Industrial Research (CSIR); Sir K S Krishnan took administrative charge of the Insdoc; and I became the Chairman of the Technical Committees. In 1951, the first two proposed that the Insdoc should take charge of the future development of CC. It was an attractive proposition. However, we thought that we should wait and see, as much would depend upon the Head of the Insdoc. Therefore, this proposal was not pursued. This appears to have been for good. For, recent events show that CC has fallen out of favour with the Insdoc even as DC had fallen out of favour with the Library of Congress about 67 years aim (See Sec 72). It is hoped that this will be temporary.

7.5.4 Indian Standards Institution

In 1952 an idea was developed that the Indian Standards Institution might take charge and sponsor the development of CC This was suggested on the analogy of the British Standards Institution having charge of UDC. However, this idea was not pursued seriously.

7.5.5 Madras University

In 1956, at the suggestion of my wife Sarada, and with the concurrnce of my son R Yogeswar, an Endowment of Rs. 100.000 was given to the University of Madras for use in establishing the Sarada Ranganathan Professorship of Library Science. With the aid of the University Grants Commission and the other resources of the University, a Department of Library Science was established in the University in 1961 with the Sarada Ranganathan Professor at its head. At the request of the Vice-Chancellor as to what all could be done by the Professor and the Department, I gave a memorandum of suggestions One suggestion was that the Department should take charge of the future development of CC. This would be appropriate as during its first 20 years, CC developed in the Madras University Library. But, the University has not yet taken up this matter.

7.5.6 Asia Publishing House

About 1962, the subject of the future development of CC came up for discussion between the Asia Publishing House and myself. We considered the possibility of persuading either the Indian Standards Institution or the Union Ministry of Education to take over the future development of CC But Peter Jayasinghe of the Asia Publishing House said in effect "Is it wise to give this academic work to a Department of the Government? After all, you will have to yourself find out your successor to take charge of CC. He

in his turn will have to find out his successor. The Asia Publishing House will always be guided by your decision and that of your successors in this matter Can you not leave it in our hands?"

7.5.7 Sarada Ranganathan Endowment for Library Science

In 1961, the Sarada Ranganathan Endowment for Library Science was established. Its funds are vested in the Treasurer for Charitable Endowments, India. Its affairs are managed by a self-perpetuating Board of Trustees. To provide a source of income for this Endowment, the copyright of all my books including the *Colon classification* and of some other books in the Ranganathan Series in Library Science has been assigned to this Endowment. This made Peter Jayasinghe to make another proposal. He suggested the formation of a self-perpetuating Ranganathan Colon Classification Board. The Board would have a panel of probable authors from whom it will choose the editor and the reviser for my respective books including the *Colon classification.* All these books would continue to appear as volumes in the Ranganathan Series in Library Science. The Board would be an auxiliary of the Endowment. This proposal has not yet taken a final shape.

7.5.8 Documentation Research and Training Centre

In 1962, the Documentation Research and Training Centre (DRTC) was established in Bangalore with me as the first Honorary Professor. Since then, the development of CC is being informally looked after by DRTC. From 1964, the DRTC and the Sarada Ranganathan Endowment for Library Science are jointly sponsoring the quarterly *Library science with a slant to documentation.* The DRTC is also having its Annual Seminar and its *Proceedings* are published every year since 1963. These two periodicals contain the current developments in CC. Between themselves, these two periodicals have so far published 73 articles and depth schedules for diverse subjects. There are also 25 unpublished depth schedules for other subjects, worked out by the students and some visiting research workers of DRTC. The DRTC is fortunate in having a band of competent, devoted, and enthusiastic permanent staff for teaching and research and also a circle of research workers informally attached to it: All the articles and depth schedules are directly or indirectly due to them. This informal development has prompted a new hope for the future. At the instance of the far-seeing Professor P C Mahalanobis, the Indian Statistical Institutute founded the DRTC and has been generously maintaining it. It is a small residential institution. It works in the spirit of the All Souls College of Oxford and the Institute for Fundamental Research in Princeton. According to the Chairman of the FID/CR (= Classification Research Committee of the International Federation for Documentation): "It is well known, however, that the *Documentation Research and Training Centre* (DRTC), which was founded at Bangalore in 1962, has become not only an Asiatic but a world center for classification research. Many significant research reports have been issued by this institute, partly in the quarterly *Library science with a slant to documentation* since 1964, and partly in the *Proceedings of the Annual DRTC Seminar* since 1963" (19).

7.5.9 A Call for an International Organisation

M F Jones of UK has suggested the need for an international organisation to maintain CC up-to-date. The following are his words:

"New particles of knowledge may conceivably arise; new methods of combining these particles may also occur; and changes in the notation may become necessary; here are three good reasons for continuing to revise the Colon scheme (as its founder has already done on five separate occasions). Furthermore, the "depth" schedules have not reached edition one yet, let alone revision.

"Would it not therefore be a good idea if, in full consultation with Dr Ranganathan, a permanent International Committee is established, consisting of men and women well versed in either practical or theoretical classification (and preferably in both) with the purpose of revising and re-publishing the Colon scheme whenever the Committee considered this desirable? Provided the Committee's concern was not lavishly to worship Dr Ranganathan, no harm would be done; and the original product of one man's mind over 33 years could be developed into whatever may be its logical conclusions" (21).

8.1 Comparison of Qualities

In the light of what has been discussed in the preceding sections to display the comparative merits of the four schemes for classification, four scores are used: 0 Poor; 1 Passable; 2 Fair; and 3 Good. In the light of the total scores the four schemes will fall in the following sequence of preference: CC, UDC, LC, DC.

SN	Points for Comparison	Sec in the paper where discussed	CC	DC	LC	UDC
1	Scope of classification	11	3	1	1	3
2	Sequence of Main Subjects ..	2	3	2	3	2
3	Provision for new Main Subjects ..	28	3	0	1	1
4	Provision for "Systems" of exposition of a Basic Subject ..	3111	2	1	1	1
5	Provision for “Specials” of a Basic Subject..	3112	2	1	1	1
6	Crisp words to denote ideas	361	2	2	2	2
7	Sameness of patterns in the sequence of subjects going with different Basic Subjects ..	361	1	0	0	1
8	Objectively used postulates and principles	375	2	0	0	1
9	Systematic procedure for practical classification	376	3	1	1	2
10	Avoidance of fault of alternative places for a subject ..	41	3	3	3	0
11	Inner mechanism to find a helpful place to a new Compound Subject ..	6	3	1	1	2

12	Length of base of notational system	2	3	0	3	1
13	Provision of connecting digit	3894	3	0	0	2
14	Hospitality in chain	6	2	2	0	2
15	Hospitality in array including extrapolation and interpolation ..	6	2	1	0	1
16	Agency for promoting use		0	3	3	3
17	Permanent organization for development	7	0	3	3	3
	Total		38	21	23	28

8.2 Impact of CC on World Thought and Practice

During the last thirty years the influence of CC and its new foundations and methodology in classification has been slowly spreading. During the last twenty years its impact on world thought in the theory and practice of classification has been unmistakable. Sec 83 to 87 give some excerpts indicating such an impact.

8.3 International Federation for Documentation (= FID)

1 Donker Duyvis, Secretary-General, FID: "We have in a spiritual sense a stronger relation between CC and UDC, a stronger relation because Ranganathan has been willing to act as leader for the theoretical study of classification in the FID (FID Committee CA) ... I know that the task to bring together the two main universal multi-dimensional and dynamic classification is almost superhuman and I must confess to feel myself unable, even to fulfill it in part. But if we can see one in whom we have confidence he will make at least a serious attempt to unify, I think it is our wise friend from the East" (10).

2 International Conference of Libraries and Documentation Centres (Brussels, 1955). On the basis of a Group Meeting on Classification with special reference to Facet Analysis held during the Conference, the following resolution was passed at the Plenary Session on 16 September 1955: "The FID recommends that a deeper and more extensive study should be made of the general theory of classification, including facet analysis, and also of their application in the documentation of specific subjects."

8.4 International Conference on Classification

1 In its letter of 20 December 1956, the Organising Committee of the International Conference on Classification (Dorking, 1957) wrote to Insdoc, India's representative on FID: "This Conference will be a development of all Dr Ranganathan's work in the last twenty years and it will no doubt be a means of spreading interest in his work and appreciation of it ... It is essential that the Indian Government should receive notice of the Conference" (20).

2 Conclusion 2: "There is general agreement that the most helpful form of classification scheme for information retrieval is one which groups terms [isolate ideas] into well-defined

categories which can be used independently to form compounds and within which the terms can be arranged in hierarchies" (20). This spells out exactly what CC has achieved and demonstrated during the last forty years.

8.5 Japan

Shigenori Hamada, President of the Japan Information Centre of Science and Technology: "India has made a great contribution to the field of documentation and library science ... I firmly believe that India gives a great stimulus to the foreign countries, especially to Asian countries, by showing the various energetic activities such as the establishment of the Documentation Research and Training Centre" (16).

8.6 United Kingdom

1 Classification Research Group, London: "Need for a faceted classification: The enumerative schedules ... fail to display correct relations between terms [isolate ideas] ... A type of schedule is needed which allows a given genus to be sub-divided in more than one way, to give several sets of subclasses, each of which is a homogeneous group of collateral species. Such a schedule is in fact a faceted classification" (5). This is a true description of the essence of CC.

2 W C Berwick Sayers, the author of several books on classification and formerly Lecturer in Classification in the School of Librarianship of the University of London: "The scheme [CC] and particularly the analytic and synthetic methods associated with it, have influenced recent classification study greatly, even to fascination" (73). "CC has introduced ideas of value; one of them, the Octave Device, adopted by the International Federation for Documentatation in 1948 for use with the UDC, is probably important" (72).

3 B I Palmer, Education Officer, Library Association, London: "Ranganathan has systematised the study of classification into principles, rules, and canons, ... which have worked a revolution in our subject, and changed it from a dull theory with apparently little relevance to practise into an insicive intellectual tool which could be used to analyse existing schemes or to help in the construction of new ones" (25).

8.7 Union of Soviet Socialist Republics

E I Shamurin: "Ranganathan aims to uncover the internal structure of the principles of the development of scientific library and bibliographic classification providing ... a correct deeply thought out organisation of recorded knowledge in all its divisions and subdivisions ... Bypassing it and ignoring it while developing new current scientific library classification is impossible" (74).

8.8 United States of America

1 Dr Jesse H Shera,Dean of the School of Library Service, Case Western Reserve University: "The great contribution of Dr Ranganathan into this taxonomic world of

library classification was that he began by thinking of what really goes on in the mind of a person while consulting a library file. He asked himself first, "How does knowledge arise?" He said, "It arises in a variety of ways, by assembling, by coordinating and so on." This itself was something to which his contemporaries had not addressed themselves. He began also to think in terms of facets. He realized that the book was not the same thing to different people, and he talked about most favoured categories, and the like; and he determined his famous facet formula: Personality, Matter, Energy, Space, and Time — or as it is called PMEST. This was a tremendous step forward. He broke through, literally, the crust of taxonomic rigidity into which classification had been poured and said, "We want very little pigeon-holes. We will have a fluid system to emphasize certain elements depending upon the type of curiosity" (75).

2 Harold Lancour, Dean of the Graduate Library School of the University of Pittsburgh: "His [Ranganathan's] explorations in the organisation of knowledge have led to the creation of a new approach to classification based on Facet and Phase Analysis. Indeed, upon his creative enquiry into the nature of documentation, rests the structure of modern library and information sciences" (17).

9 CONCLUSION

9.1 DC and UDC of Nineteenth Century Origin

DC and UDC are nineteenth century Schemes for Classification. DC was not only a pioneer but also the best of its age. As Dr Shera has ably pointed out, it is a creature of the nineteenth century ideas; it is essentially taxonomic (76, 77). UDC has been making a heroic attempt to remove the defects of DC and to increase its suppleness. In doing so, it has been able to retain only about one-third of the DC, as Donker Duyvis has pointed out (11). UDC has thus become a different scheme. It is making continuous changes in the sequence of Compound Subjects so as to receive new ones in helpful places and to bring the sequence in conformity to the current consensus among scholars. It has begun to realise that it must consciously design its future schedules on the faceted basis after the model of CC. See for example, its new Schedule for Plastics and its revised Schedule for Education. Proposals are also being made to change the sequence of the Basic Subjects and even of the Main Subjects. This is but natural. For, the Universe of Subjects is in a state of great flux.

9.2 Role of Classification

A Scheme for Classification is but a tool in the hands of the library to organise subjects and to serve them out in an efficient way. And the library itself is but a social agency to help the forward movement — the flux — of the society in the vital, mental, and spiritual planes. A scheme designed in the light of the experience of a century ago naturally stands outmoded. DC has withdrawn itself from being of service to specialist readers. As already stated, UDC is trying to break its nineteenth century shackles and to change-over from difficult readjustments — now and again, and here and there — to a change-over to a more global reshaping of itself.

9.3 CC of Twentieth Century Origin

The CC of today is the outcome of the travail of the DC and the UDC of the last century. It has retained all the features of DC and UDC, that are of enduring value. Indeed, it stands on their shoulders, as each successive generation stands on the shoulders of its predecessors. It has based itself on a new kind of foundation with a greater resilience and capacity to stand the pressure of the rapid new proliferations being thrown forth by the Universe of Subjects today. It is fitted with inner mechanisms in the idea plane and in the notational plane to receive and put each new Compound Subject and each new Basic Subject in a helpful place with the least disturbance to the already existing sequence. Its development is made to walk hand in hand with a dynamic theory of classification suited to the structure and the dynamism of the Universe of Subjects. Like the trunk of an elephant it is developing versatility to represent at once the huge macro subjects abundant in generalist libraries, such as public libraries and school and college libraries, on the one hand, and the other even the tiny micro subjects abundant in specialist libraries. It is able to arrange all such subjects in a more orderly and helpful way than its predecessors. Statistical Analysis has shown that the mean length of CC Numbers for macro subjects-is one digit less than those of DC and UDC Numbers (65); and that the mean length of the CC Numbers for micro subjects is about six digits less than that of UDC Numbers (66).

9.4 Ever-Continuing Conflict

In his *Battle of the books,* Jonathan Swift has given an exquisite picture of the ever-continuing conflict between the cultures and the ideas of the successive generations of humans. Persons in the above-fifty age-group generally lose their resilience and seek to perpetuate whatever they have been accustomed to. Efflux of time puts some of these people into positions of power and influence. Some among these seek to suppress the ebullience of the succeeding generation by the administration of patronage and threat. Occasionally, this suppression tends to be carried out with fanaticism and even through misrepresentation of facts, under the stimulus of animosity. This has been going on for ever in every sphere of life and of ideas. Library Science is no exception to it. This world-trait is reinforced in the India of today by the seepage, into the present, of the unfortunate outlook developed during the last few centuries of cultural exhaustion, rest phase, and political subordination. People have been accustomed to look beyond the seas even for the supply of their daily wants — even for the very salt for their food and the very toys for their children. They have worked themselves into the belief that everything good in intellectual world should be picked up only from foreign lands and that everything of Indian origin should be rejected, for right reasons or wrong reasons, whatever it be. It is against this suicidal trait that our Prime Minister Mrs Indira -Gandhi warned us last December and appealed in effect, "We must bring in the 'Swadeshi' in a new way in our present context."

9.5 New Generation of the Indian Library Profession

In the ever-continuing fight between the old and the young, if the dharma of the old is to stick on to the encrustation of the past, the dharma of the young is to break through that encrustation and introduce the changes necessary to fit in with the new world. If the old in India still continue to decry the indigenous Indian contributions to thought and to

know-how, the new generation should escape from their deadly influence and develop new indigenous theories and techniques in India and keep on refining them. The Library Profession of India is only about two generations old. The younger members in the second generation and the members of the third generation have a great responsibility in the choice of the various library techniques in general and of the Scheme for Classification in particular. They should not be overcome by fear. They should act collectively so that no individual is harmed for speaking the truth. They should critically examine *ex cathedra* pronouncement — such as

1 CC is new — suppressing the fact that is has been in use for more than thirty years;

2 CC has produced disorderliness among the books in the university libraries — suppressing the fact that the students and the scholars of the last thirty years have acknowledged the greater helpfulness of CC arrangement than that of any other;

3 CC Number is much longer than that of DC or UDC — suppressing or ignorant of the fact that it is just the opposite;

4 CC Number is complicated — suppressing or ignorant of the fact that it is simple at the book level, and that it is no more complicated than the UDC Number even at the level of articles and other micro documents; and

5 CC is scholarly and suitable for specialist libraries only, but not suited for generalist libraries — suppressing or ignorant of the fact that it has been found quite suitable in all kinds of libraries. Time has come for the "Baby to be taken over" by the new generation of librarians in India. It is for it to go on refining CC and nurturing it if it has any real worth in it, or to throw it overboard if it be a hindrance rather than a help, and to design a new and a better scheme of its own. The new generation of librarians should study the problem without any preconceived notion for or against CC and in a scientific spirit. In the light of its findings, it should march forward undeterred and win in the "Battle of the Books".

9.6 Post Script

9.6.1 Pereault's Re-Classification

The pamphlet on *Re-classification: Some warnings and a proposal,* September 1967, (University of Illinois, Graduate School of Library Science, occasional paper, 87) by Jean M Perreault was received here when this article had already been composed by the printers. Most of the points discussed in it have been covered in one way or other in this article. Thus, this article turns out to be a review-article on Perreault's pamphlet also.

9.6.2 Release from the Grip of Tradition and Pressure

This pamphlet releases the choice of classification from the grips of prejudice, tradition, and the pressure produced by extra-academic factors, pressure, and "influence". When I was in Florida, the President of a University had just ordered that the classification should be changed into LC. And the reason he gave me was a simple one,

"I have seen it used in the universities where I had worked"! And the President had to be obeyed.

9.6.3 Unwisdom of Re-Classification by LC

Perreault has given cogent, sound, and scientific reasons bringing put the unwisdom of re-classification by LC. He has also administered a warning that the adoption of LC will ultimately prove prejudicial to the development of library service and of library science. He is not afraid of being a solitary voice in the USA of today to administer such a warning. He is indeed a brave soul; and the progress of the world depends essentially on such brave souls.

9.6.4 Additional Comments

There are, however, two statements in Sec 3.12 of the pamphlet calling for additional comments.

9.6.5 Alien Look of BC and CC Notations

According to Perreault, "The major reason for not advocating CC or BC is their notations; not that they do not do what is expected of them (namely, primarily, that they "Mechanize" the order — in array and in chain — of concepts), but that they are so alien to what we expect a library notation to look like, that it would be very surprising if they could be widely acceptable in American libraries."

9.6.6 Three Purposes of Classification

Generally, there is resistance to anything new or unfamiliar *(See also* Sec 3813 to 3816 of this article). Such a resistance blocks progress. There are three uses of classification as Perreault himself suggests:

1 It helps in the precise and co-extensive ascertainment of the subject of a document;

2 It mechanizes the helpful arrangement of the documents - old ones as well as new arrivals — on the shelves, and of their Main Entries in the catalogue; and

3 It is helpful in eliciting from a reader the precise subject required by him at the moment.

In the American library tradition, the second use dominates; and classification is not used for the first and the third purposes. This impression of mine was gathered from the younger generation of librarians in my visits to USA. Recently, this was confirmed by a young American librarian visiting us in DRTC a few months ago. If the American librarians realise the great importance and value of the first and the third purposes of classification, there is every chance for the disappearance of the allergy alleged to be now prevailing in America against a notation said to be "so alien to what we expect a library notation to look like". Further, the look of UDC number would also be alien, if it is worked out to its fulness as it should be.

9.6.7 Intercalation of DC and UDC Numbers

Secondly, according to Perreault, "An additional advantage of UDC is its close resemblance to DC; a policy of "osmosis"

could be adopted in re-classification from DC to UDC which, while it would be less than perfect in having on the same shelf documents collocated somewhat differently could at least allow intercalation — as against the necessity of parallel and separate collections when re-classification from DC is to LC or CC".

9.6.8 Separate Sequence Preferable

The Method of Osmosis will be of equal help whatever be the change in the scheme for classification. The facility of intercalation between DC and UDC numbers, presumed by Perreault, will in actual practice result in more confusion and will be less helpful than the change-over to a totally different notational system. This has been verified.

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Note —

1 The following is the list of documents used.

2 Column 1 of this bibliography gives the serial number of the documents included in it.

3 Column 2 of this bibliography gives the number of the section in the text, where the reference to the document occurs.

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