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DOCUMENTATION, COMPUTER, AND CLASSIFICATION.
(Non-conventional methods in document retrieval. 4). (Classification problems. 23).

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A computer can be of use in repetitive work in a library, wherever it is viable. But it cannot be used for classification for which judgement is necessary. The memory of a computer should be fed with classified main entries to enable it to produce for browsing a set of entries in classified sequence. The Freely-Faceted Classification is the most evolved scheme designed so far, for use in computer. Version 3 of CC is an example. Continuing concerted research is necessary in the fields of design of depth classification and of building of computer.

1 "LOTUS EATER" IN MAN

10 NATIVE INERTIA

The "Lotus Eater" in Man is inexorable. On the slightest pretext it makes man fall into a mood of inaction saying to himself, as it were, "Why should life all labour be, when there is a god or somebody else to do everything for us?". This mood begins first as complacency, then transitions into inaction, and finally lands man in indolence. Here the native inertia in man gains the upper hand. Any inner urge for an active life and work-satisfaction gets smothered. The danger of this is particularly severe and widespread in a profession just born; and the library profession is one such. Therefore, the library profession should keep itself on the alert against the "Lotus Eater". This is particularly necessary in India and the newly developing countries of today.

11 SELF-DOCUMENTING SCHOLAR

Till about a century ago, the librarian was often an approximation to an antiquarian in the book world and a descriptive

and historical bibliographer. He did service fairly well to suit the needs of the few scholars in the Humanities, History, and their auxiliaries. Even to them, his chief service was due to his knowledge of the book as a whole and to his long-built memory which would enable him to bring several forgotten books to the notice of a scholar. But in regard to documentation work — that is, listing micro documents, particularly nascent ones — the scholars were self-documentalists. Time — as immediacy — did not exert much pressure on such scholars. Therefore, they did not find any need to delegate document-search, documentation work, and documentation service to the librarian. Library Committees — of say, University Libraries — were usually made of the Dons of the University. They would not even concede the possibility of a minute classification of reading materials or allow their arrangement in a classified sequence. For example, in 1925 I found the books in a Scottish University arranged in accession sequence. The librarian who was knowledgeable told me that the Chairman of the Library Committee would not allow him to classify the books and arrange them according to class numbers. A day later I called on a professor of the University, who was my professor's professor. He was a famous scholar.

Prof.—Why did you give up your teaching work and become a librarian? What is there in librarianship to attract a man with brains?

R.—Pinpointed service of documents to scholars and students is an important service. It would give a challenge even to the best of brains.

Prof.—Professors and students know what they want. They ask for it. What have you to do except to pull out the document asked for?

R.—This assumption is not right. The librarian's duty is to bring to the notice of scholars and students documents not known to them — be they old or the latest ones published the other day. Their number is so great that no scholar or student will know all of them.

Prof.—What can the librarian do?

R.—He classifies the documents minutely and arranges them according to the class numbers. In this arrangement, the documents follow one another in a helpful sequence, according to the degree of filiation of their subjects. When a scholar or a student mentions his subject, the librarian can show him on the shelves a subject-spectrum as it were. Browsing amidst the documents in the successive subjects appearing in the spectrum, helps the scholar or the student to find all the documents relevant to his search at the moment, in spite of his not having known many of them.

Prof.—How can such a classification be done? In what subject will you put Whittaker and Watson's *Modern Analysis*?

R.—Classification and Cataloguing have together developed methods of dealing with such multi-focal books.

Prof.—How can a librarian classify books unerringly where even scholars fail? The Royal Society started with an ambitious scheme of classification. It asked the specialist scholars themselves to classify. In spite of it, look at the absurd classification they have made. They classified, as Dynamics, the *Laws of motion* of Sylvester! As a mathematician, you know that Sylvester was an algebraist and that his paper was on the Theory of Indices!!

R.—This should have happened because the scholars who were engaged in classification did not know the first principle in classification.

Prof.—What is that principle?

R.—Never classify by the title. Dip into the document to determine its subject.

The conversation went on in this style for nearly an hour. The Professor slowly began to concede the helpfulness of classification in document-search and the advantage of leaving document arrangement and document-search in the hands of a specialised profession—the Library Profession.

Prof.—But why has not our librarian done anything of this kind?

R.—He is an able man. He told me that he was prevented by the domineering self-willed Chairman of the Library Committee from disturbing the old arrangement by accession numbers.

Prof.—I may tell you at once that you are now talking to that very Chairman!

We had a hearty laughter and the Professor said that he would tell his librarian that he had full freedom to give the best of his profession to the scholars and the students in the University. In such a context the "Lotus Eater" in the librarian would easily assert itself and deprive him of any urge to develop documentation work and service and thereby become a partner in research. No need would be felt for any close classification of books—let alone the depth classification of articles in periodicals.

12 SERVICE TO THE GENERALIST READER

From the beginning of the present century, public libraries came to be established in increasing numbers for the service of the common man. These libraries created a new wing, as it were, of the library profession. Its main mission is to attract the common man to the library and give him "Whole Books" for recreation, inspiration, and information. The public librarian specialised

in devising various methods of attracting the public to the library and of retaining their custom. He found that the "Finding for every reader his book, finding for every book its reader, and saving the objective as well as the subjective time of the reader" were facilitated by arranging the books on the shelves in a classified sequence in the measure of the degree of the filiation of their subjects. The DC served this purpose admirably well. But the generalist reader was seldom interested in the deeper layers of the new thought just being created in the diverse subjects. Therefore, there was no demand for classifying articles in periodicals. It is no wonder therefore that the "Lotus Eater" in the public librarian prevented him from refining the scheme for classification in use towards what we now call 'Depth Classification'.

13 SERVICE TO THE SPECIALIST READER

But the specialists, engaged in industrial research, gradually felt the need for documentation work and service. For, their need was for nascent micro subjects just appearing in print as articles in periodicals. Moreover, immediate service without fumbling about was another need of theirs. The success or the failure of an industry would depend on these needs being met or not met. But neither the bibliophilic nor the public librarian seems to have sensed this for long. Therefore, the specialists were obliged to release a few from among themselves to do document-search. For some years, their specialist knowledge enabled their inner memory to absorb and store the titles of the nascent micro documents appearing in their respective subjects from time to time. Little was realised that the down-pour of micro documents would soon disable the inner memory from doing so. Therefore, hardly any serious attempt was made to develop an "externalised memory" with the aid of Depth Classification. The traditional subject heading was the utmost limit to which the "Lotus Eater" in them would allow them to go whatever be the difficulties caused by it. Here is an example of the grip of the "Lotus Eater" on the specialist librarian. Some years ago, taking advantage of the hospitality given by the Rockefeller Foundation, I visited several industries and industrial libraries in USA in order to gain first hand knowledge of the problems involved in serving micro documents to specialists and in the design of the depth classification needed for documentation. A friend of mine introduced me, on the phone, to the specialist librarian of an oil enterprise. He mentioned me as Professor. He would not describe me either as Librarian or as Professor of Library Science. He said that I would know the reason later on.

SL (Specialist Librarian).—I am glad to have you with us, Professor. What can I do for you?

R.—I want to study your documentation work.

SL.—I am ever so glad. I analyse every oil periodical and put in Subject Analytical Cards for every article.

R.—That is exactly what I want to see.

SL.—Here they are in this battery of cabinets.

R.—You have indeed put in a good amount of work on this. It should be very helpful to your research workers.

SL.—I improvise all the subject headings myself. I have no faith in the librarians trained over there in the University. They can only stamp books or talk 'theory' at best.

R.—Here is something interesting. Over there in the third tray, I found a certain article indexed under a subject heading. When I pull out this forty-ninth tray, I find an article on the same subject put under a different subject heading. Let me check up whether you have put it under the other heading also... No you have not. Nor have you put that other article in this heading.

SL.—Yes. I see it. You should be quite thorough in your oil technology, Professor. No other Professor discovered this inconsistency nor did I. What enabled you to find out this error?

R.—Facet Analysis.

SL.—Facet Analysis! I have never heard of this in oil technology.

R.—No. You cannot. It is a technique in library science—particularly in classification.

SL.—How did you find time Professor to be wasted on library science?

R.—I am not a Professor of Oil Technology as you seem to have assumed. I am a Professor of Library Science. Then the SL became very apologetic for his having used abusive terms so often in referring to the library profession. The "Lotus Eater" in him had not allowed him to step out a little and learn the techniques of classification; and what was worse, he even developed a contempt for it.

14 POST-WAR DEMAND FOR DEPTH CLASSIFICATION

After World War II the mounting population pressure has begun to create a problem. To prevent havoc by the internal enemies such as starvation, squalor, and disease and to be prepared to meet war and aggression from outside, every country finds it necessary to maximise its industrial output and for this purpose to maximise its industrial and pure research. One of the steps necessary in maximising them is to introduce a division of labour in research and to mark off those with special aptitude for

research from those with special aptitude for document-search. Another necessary step is to minimise the same research running in parallel in different wings of the same enterprise or in different enterprises in the same country, or even in different countries to the extent practicable. On the other hand research must be made to run in relay. Each team should take up its own research at the point where it was left by an earlier team, carry it forward, and hand it over to some other team for further pursuit. To secure this, documentation should be thorough. In other words, it should bring to the notice of every research worker or research team pin pointedly, exhaustively, and without any loss of time all the micro documents bearing on the subject of investigation. It is the nascent micro subject that is of vital importance. One of the known methods of securing this level of efficiency in documentation is to organise the documents or their entries in a strictly classified sequence with the aid of a scheme of depth classification, capable of giving co-extensive individualising class number to every subject, however narrow its extension and however deep its intension. This pressing social demand has led to a considerable amount of research in classification during the last twenty years. Two of the outstanding results that came out of his piece of research are Facet Analysis (based on certain Postulates and Principles) and Chain Procedure. The Facet Analysis helps in the work of a classificationist in designing a scheme for depth classification and in the work of a classifier using a Depth Scheme. The Chain Procedure helps in the construction of Subject Headings in a systematic and economical way for the Class Index Entries in the alphabetical part of a documentation list and in the construction of Feature Headings in the classified part of the list. The value of this Facet Analysis was emphasised in 1955 at the time of the International Congress of Libraries and Documentation Centres held in Brussels — even before it was refined with the aid of Postulates and Principles. One of the findings recorded at that Conference was that all future classification should be based on Facet Analysis, if it is to serve the purpose of depth classification. Thus the library profession has begun to silence the “Lotus Eater” in it and see the wisdom of becoming a partner in research by doing document-search and by doing the research in Depth Classification needed for that purpose. The specialists in the other subjects are also beginning to see the wisdom of withdrawing themselves from the field of classification and turning their whole thought to research in their respective subjects.

15 AN ASIDE

In newly developing countries, the “Lotus Eater” seeks

to linger on in the library profession with the old argument often repeated in the century before recovery, "Why should there be any research, any re-thinking in our country? All that is needed is being done in the West". I have heard this argument quite often when the Indian Universities began to establish their Research Departments about forty years ago. Once I was provoked to ask, "If there is no need for research, why did you allow the establishment of Research Departments?" Spontaneous was the reply of the foreigners, "Just to provide places for a few educated Indians". But fortunately in respect of industrial research, the two unfortunate Border-Wars have given a shock therapy, as it were, in India. But in newly developing countries the old argument of the "Lotus Eater" is not easily withdrawn in many of the other subjects for research. It appears to linger on with obstinacy in respect of Library Science in general and of Classification in particular. The old guards still insist that anything useful in library classification can only be imported from abroad. This opinion is expressed *ex cathedra*. For, the "Lotus Eater" in them prevents them from either seriously studying any indigenous attempt in the subject or applying the results of such an attempt. Perhaps this is due to their being too old and their mind having become too rigid. But, however, we should remind ourselves of Bernard Shaw's definition of a gentleman. The new generation of librarians in a newly developing country should take it as a matter of honour to their country to be a gentleman among nations. To be so, each country should give to the world at least as much as it takes from others in respect of research and design in Classification. If external threat and internal insufficiency make a country to take to research in other subjects and in industries, the moral obligation to be a gentleman among nations should make it make its own contribution by way of research in the library field. Hence the appeal goes to the library profession to exert itself in doing research; and to the older among them to value and support research within the country. The library profession of a country should also apply what is designed and discovered within it. Let not the young librarians allow themselves to be inhibited by the "Lotus Eater". Let not the young librarians eager to do research allow themselves to be discouraged in any manner. Let them not allow themselves to be threatened with the peril of their losing their places or jeopardizing their future, if they adopt any of the new techniques designed within their country. On the other hand, they should do everything to defy all such supports being given to the "Lotus Eater". They should find satisfaction and delight in the active pursuit of research in library science in general and in classification in particular, and in adopting the indigenous techniques,

and in continuing to improve them from day to day, without of course shutting the doors against any of the newer and better ideas developed abroad.

16 "LOTUS EATER" AND THE PROP FROM THE COMPUTER

At a time when the library profession in the world is accustoming itself to its new function as documentalist and, for that purpose, to the cultivation of the field of classification, the "Lotus Eater" in it has picked up a new prop to re-assert itself. This new prop has been furnished by the Electronic Age ushered into the world after World War II. The Computer is one of the versatile forms in which electronics can help mankind. We must accept the Computer. We must derive all the benefits it is capable of giving us. It can relieve us of much of repetitive routine work and thus it can release man to higher kinds of work—particularly creative work. Its versatility is being increasingly extended year by year. Naturally, the electronic engineers would like to permeate everywhere. They have tempted the "Lotus Eater" in the library profession with the very welcome words, "You need not hereafter slave at classification and cataloguing. Our Computer will do all that for you". The immediate result of such an assurance to the "Lotus Eater" was a cleavage in the library profession. Many said with relief, "No more bother". The Computer and the Programme Assistant will do all the necessary document-search. However, there is now a slow recovery from this naive faith in the Computer. There is willingness to examine the problem uninfluenced by the "Lotus Eater". Let us trace the stages through which the examination of the problem has been moving.

2 SCOPE FOR ELECTRONICS IN LIBRARY WORK

21 VIABILITY AND SCOPE

There are many items of work in the day-to-day management of a library which can very well be transferred from human hands to the Computer. Of course, this should be done only as and when it acquires economic viability. Economic viability would depend upon the work-load of each kind to be transferred to the care of the Computer and upon our capacity to make Computers ourselves without importing them from abroad at the cost of our all too poor foreign exchange capacity which is all needed for more urgent and vital purposes. Ultimately, it would depend on the stage of development of the country.

22 HASTY MISTAKES

Whatever mistakes may be made in this respect in the

first flush of amazement and wonder, the Laws of Economics will soon bring in wisdom. Avoidance of rash, precipitous, and unthinking change-over is particularly essential in a newly developing country with a vast population. The mistake of such a country in renting or purchasing Computers, at a cost too prohibitive for library purposes, should be avoided.

23 CATALOGUING

A Computer requires a considerable capital investment. Therefore, it will not be economical at present for an individual library to resort to it in the work of cataloguing. To get an adequate return on the capital investment, it looks as if a Computer can be thought of only on a country-basis or even on inter-country-basis.

24 CLASSIFICATION

Apart from this, an important question is, "Can classificationists and classifiers abdicate their function and depend on the Computer to take their place in the chain of work involved in the rendering of library service to the satisfaction of all the Five Laws of Library Science?" They cannot. Because, classification involves judgement—judgement of the subject of the document in all its facets and arrays manifest in it. This cannot be done by the statistical analysis of the words in the document, which alone the machine can do.

25 BROWSING, A NECESSITY

A Computer can inform a reader, almost instantaneously, the location of the book needed by him at the moment, if he mentions particulars, such as author and title. For, there is no judgement involved in this. But it is a matter of experience that the majority of readers do not and cannot always look for their document *via* the name of the author or the title. The most popular approach is the subject approach. Here, hardly any reader—particularly, a reader engaged in work in the wave-form of knowledge—can specify his subject in exact terms, with all its "individuating particularities" as William Blake would put it. He can identify it only when he sees spread out before him, in a more or less Apupa pattern, the subjects falling within his umbral and penumbral regions of interest. A homely parallel is the inability of a lady to specify the exact colour pattern and the other details which her new saree (the coloured silk cloth worn by Indian ladies) should have. It is seldom that her husband can give her satisfaction if he is guided merely by her verbal instructions. On the other hand, the moment the shop-keeper spreads out an assortment of coloured sarees before her, the lady

is able to pick out her choice to her full satisfaction without any loss of time. So it is with a reader; the specific subject of interest is often ineffable. Therefore, browsing through a classified sequence of books or of catalogue entries is a necessity.

26 CURRENT LIVE BOOKS

Therefore, whatever be the case for computerising the old seldom-used books or their catalogue cards, the current live books — that is, books not yet outmoded in thought, say books published within the last fifty years — should be placed in stack-rooms and given open access; and their classified catalogue should be in the conventional form that can be directly read by the readers. The stack-room should be guided plentifully with tier-guides, gangway-guides, bay-guides, and shelf-guides. Each guide board or guide label should have a bilingual legend. It should carry the name of the subject in the favoured natural language of the library; this is obviously necessary. It should also carry the name of the subject in the classificatory language — that is, the class number of the subject — in order that the mind of the reader may be guided helpfully without getting irritated by the absence of the familiar alphabetical sequence. Similarly, the classified part of the catalogue of the books of current value should have guide cards with similar bilingual legends. Further, close classifying is essential. To make close classifying keep step with the onward march of the Universe of Subjects, the classification system should be continuously refined and kept ever up-to-date. For this purpose, the service of the professional classificationist is essential. Continuous research in classification is also essential. Therefore, the library profession should not allow itself to be corrupted by the advent of the Computer and should not rest on its oars or desert the discipline of library classification.

27 OLD DEAD BOOKS

In the case of the old dead books, the number of readers seeking them is likely to be small. But even they can get better help if browsing or scanning through a sequence of classified entries is made possible for them. Perhaps, the Computer is being fast sophisticated sufficiently to enable it to type out such a spectrum of classified entries in the Apupa pattern specific to the reader at the moment. But to do this, the memory of the Computer should be stored with minutely classified main entries of all the books and other documents. This again makes the old dead books also point to the same conclusion as the current live books do. The library profession cannot throw away the responsibility to learn the discipline of classification and to keep it continuously cultivated. To get the best result from the computer, classifi-

cation may need enrichment of a new kind, which calls for special research.

28 DATA PROCESSING

Modern research is in vital need of correlation of data. A publication such as the *Tables annuelles de constantes* can only provide data. But they cannot correlate them. Nor is it possible for the librarian to do it. It is the province of the Data Specialists. They can use the Computer profitably. It is a fallacy to mistake this data-correlation work capable of being done by Computers to be the same as library service. This fallacy leads to statements such as "As data can be processed by Computer very rapidly, we now move literally into the age of patterned recognition out of the world of mere data classification". Let it be remembered that data-correlation is only a tiny part of the classification of subjects. Unlike the former, the latter requires judgement. The Computer cannot exercise judgement.

291 INEXORABILITY OF CLASSIFICATION

At present the Computer can do a good deal of the work in a library, not needing judgement. We can use it for that kind of work wherever the work-load is large enough to make the service by Computers cheaper, in the overall sense, than service by humans. But classification requires judgement. Therefore, it will have to be done by humans. It will have to be so until the Computer can have the faculty of judgement built into it. Further, the universe of subjects is ever-proliferating in unpredictable ways. Therefore, continuing developmental research in classification is necessary. Moreover, from time to time fundamental research too will become necessary in classification. Can the capacity to do research of these kinds be built into the Computer? Perhaps not. In the meantime, the more thorough the classification used, the greater will be the possibility to feed the memory of the Computer, so as to have the least leakage and noise at the time of document-search. Further, the Computer cannot give its best service unless the "Programme Assistant" has a sound and sufficient knowledge of the latest practice in classification. Moreover, the Reference Librarian should be an adept in the method of facet analysis in order to facet-analyse the mind of the specialist enquirer and thereby lead him to the closest possible approximation to the full and detailed formulation of the subject interesting him at the moment of enquiry. Then only he can be helped to reach his exact Apupa region — be it in the stack-room or in the catalogue of documents — and choose his documents to the full satisfaction of the Laws of Library Science. Then only the Reference Librarian can help the Programme Assistant

to give the right programme to the Computer. Thus, library classification is inexorable today and it may continue to be so. Let us therefore briefly trace the evolution of classification and have a look at the latest of its species.

3 SCHEMES FOR CLASSIFICATION

30 FIVE SPECIES

The core of library classification is the classification of subjects. The following five species can be recognised among the schemes for classification of subjects developed till now:

- 1 Enumerative Scheme;
- 2 Almost-Enumerative Scheme;
- 3 Almost-Faceted Scheme;
- 4 Rigidity-Faceted Scheme — that is, a Scheme for Classification with Pre-determined Facets and Facet Sequence; and
- 5 Freely-Faceted Scheme — with the alternative name Analytico-Synthetic Classification Guided by Postulates and Principles and not subjected to a pre-determined facet formula.

31 DIRECTION OF EVOLUTION

Generally speaking, the evolution of the species of schemes for classification has been in the sequence mentioned above. The Enumerative Species has been in vogue from the very beginning. The Almost-Enumerative Species was initiated by DC in 1876. Beginning with DC as core, the Almost-Faceted Species was brought into being by UDC in 1896. The Rigidly-Faceted Species was initiated by CC in 1933. Finally, the Freely-Faceted Species, the latest in the line of evolution, is being evolved out of CC itself since 1957. It reached a fairly advanced stage in 1963. It is now being widely applied by the Research Cell in the Documentation Research and Training Centre (Bangalore) in the design of depth schedules and in the depth classification of micro subjects going with a variety of basic subjects.

32 CASES OF REGRESSION

There have been some regression from the line of evolution. LC was designed as an Enumerative Scheme in 1904. The latest in this line of regression is the RIC developed in 1961. In this late year, it has been designed as a strictly Enumerative Scheme.

4 ENUMERATIVE AND ALMOST-ENUMERATIVE SCHEMES

41 ENUMERATIVE SCHEME

An Enumerative Scheme for Classification consists essentially of a single schedule enumerating all the subjects—of the

past, the present, and the anticipatable future. Such a schedule will have necessarily to be long. It will soon be overpowered by the emergence of subjects beyond the anticipated ones—overpowered in the sense, that it will be difficult to find for each new subject a class number that will individualise it and also implement its filiatory position among the already existing subjects. Moreover, the class number of an enumerative scheme often consists of a succession of semantically rich digits, not separated into meaningful groups or facets as we call them. In this sense, its class number may be said to be monolithic.

42 PRACTICAL CLASSIFICATION

To classify with an Enumerative Scheme we have successively to

1 Get a general feel of the subject of the document from its title, if it is expressive — that is, tell tale — and otherwise by a rapid perusal of its text;

2 Get the name of the subject formulated in the light of our general experience with the lay-out of the schedule of subjects in the classified part of the scheme for classification;

3 Locate the name of the subject in the index to the schedule;

4 Pick up its class number given in the index;

5 Turn to the section of the schedule containing that class number;

6 Verify whether that is the best number that can be found in the schedule to represent the subject; and in this way

7 Determine the class number by trial and error.

43 NECESSITY TO START WITH INDEX

Naturally the full schedule in an Enumerative Scheme will run to hundreds of pages. Even a schedule for the subjects going with a particular main subject will run to several pages. For example, even in such a broad and superficial scheme as RIC the schedule for the subjects going with Education runs through 20 pages. On the other hand, in a fairly close and deep scheme as LC the corresponding schedule runs through 178 pages. In DC which comes intermediate between RIC and LC in its depth, the schedule runs through 30 pages, if we exclude historical and geographical treatment. The necessity to start with the index of the schedule in an Enumerative Scheme can thus be seen.

44 RIDER'S INTERNATIONAL CLASSIFICATION

RIC avowedly forces every subject into a Procrustean bed of class numbers with three digits only. Even the schedule of geographical isolates is avoided with the following words:

“Wherever Geographical Subdivision seems by it to be called for, it sets out *as an integral part of its classification tables*, the exact amount and the exact kind of geographical subdivision which it deems necessary at that particular point”. Its schedule runs to 922 pages. It enumerates about 18,000 subjects. The shortness of the schedule is secured by RIC at the peril of its being already overpowered even by the existing subjects. For it gives one and the same class number for several subjects. For example,

PPP Ships for all sorts of special purposes. Dredges. Lighters. Floating docks and derricks. Light ships. Garbage disposal barges. Police and quarantine tenders. Fire boats, etc.

RAM Holders and containers.

Bottles. Beakers. Retorts. Flasks. Test-tubes. Supports for them. Laboratory glass manipulation. Bending. Cutting. Blowing.

XAK Phonology.

Comparative study of language sounds in all languages. Aspirates. Labials. Linguals. Palatals. Sibilants. Fricatives. Gutturals. Clicks. Sounds unique to one, or to a group of languages.

The provision of a single class number for many subjects is liable to produce “Chaos-in-Little” among the books carrying that single class number. While this is so in known subjects, one can imagine the extent of overpowering by the subjects emerging in the future. Therefore, the resilience of RIC is very limited. It is true that RIC is intended only for the classification of books embodying macro subject. It is far too inadequate even for this purpose.

45 LIBRARY OF CONGRESS CLASSIFICATION

In LC also common isolates, such as standard divisions and geographical isolates, have not been separated out into schedules of their own. It “tailors” even the geographical divisions according to the needs of the respective host subjects and builds their numbers into the monolithic class numbers differently in different subjects. As a result, its schedule runs to 29 volumes totalling about 7,200 pages. It enumerates about 300,000 subjects. What can be achieved to accommodate more subjects by a Faceted Decimal Fraction Notation, LC seeks to achieve by an Integer Notation with gaps — no doubt liberal — intended to accommodate newly emerging subjects. But subjects usually outwit our judgement about the point where gaps are necessary in class numbers and about the size of the gap to be left. Therefore, LC also is likely to be overpowered by new subjects. The chance for this is increased as one and the same gap has to accommodate new

subordinate classes as well as new co-ordinate classes. As a result its resilience too is limited though not as much as that of RIC. LC reinforces the resilience of its notational system by a profuse use of Alphabetical Device. Further, when a gap is chocked up, it adds a decimal fraction number to the integer number to represent new subjects claiming a place between two consecutive integer numbers. For example, in the schedule for the Main Class "L Education", excluding "LD Individual Institutions", 5 percent of the class numbers have such decimal fraction attachments. Here are three examples of chocked gaps propped up by decimal fraction attachment.

LB1050 Reading (General)
 LB1050.5 Remedial teaching
 LB1051 Educational psychology (General works)

LB1627 Entrance requirements
 LB1627.7 Transfer credit
 LB1628 Curriculum (General)

LB3013 School management
 LB3013.5 Visiting teachers. School social workers.
 LB3013.6 School psychologists
 LB3014 Special systems (Minor works)

46/491 DECIMAL CLASSIFICATION: ALMOST ENUMERATIVE

46 BASIC FACET AND ONE ADDITIONAL FACET

Though essentially enumerative, from the very beginning DC had provided for one isolate facet in addition to the basic facet. That was the facet of, what is now called, Standard Sub-division. This was originally called Form Division. This earlier name was meaningful. It underlines the fact that the different class numbers derived by attaching a Form Division Number to the same host class number brings together all the documents giving particular forms of treatment of the host subject. The part of a class number representing the Standard Division is an isolate facet of it. The table of Standard Divisions is really a schedule of the isolates capable of forming such an isolate facet in subjects. This can be seen from the following statement of the Editor of DC Ed 17:

"3.37 STANDARD SUBDIVISIONS Having analyzed thru all the steps of the ladder the number chosen for the book in hand, and decided that it is the correct and most specific number, you are now ready to consider what further specification is desirable, *i.e.*, whether any of the standard subdivisions are applicable.

If your book deals with technique and apparatus of the subject, you may add 028; if it consists of a collection of articles on the subject, you may add 08.

The connecting digit for an isolate facet of standards of Division is most often '0' (Zero). In a few exceptional cases, '00' '000' are prescribed. The schedule of isolates that can form Standard Subdivision Facets is given in pages 1255 to 1262 of DC Ed 17."

47 BASIC FACET AND TWO ADDITIONAL FACETS

DC Ed 17 has provided for two facets in addition to the basic facet. One of them is the facet of Standards Subdivision already described in the preceding section. The second is the Geographical Facet. The geographical isolate number is called Area Notation. The Area Table gives the schedule of the isolates capable of forming a geographical facet. This can be seen from the following statement of the Editor of DC Ed 17:

"3.353 *Area notation* When a given heading has particular geographic significance and there are numerous books dealing with the subject in a given continent, country, locality, or other area, provision is made to expand the number for that heading by area. For example, under 331.29 Historical and geographical treatment of wages, you will find the instruction, "Add area notations 1-9 to 331.29". This means that a book on wages in Japan is to be placed in 331.295 2, that is, 331.29 plus the number 52 for Japan from the area table on page 1263. Wages in Tokyo would fall in 331.295 213 5, wages in rural regions in general in 331.291734."

The connecting digit for an Area Facet is '2' when it is so indicated in the schedule of basic subjects and otherwise '09'. The schedule of isolates that can form Geographical Facets is given in pages 1263 to 1503 of DC ED 17.

48 SYNTHESIS WITHOUT CONNECTING DIGIT

DC has been all along providing also for what may be mistaken for an isolate facet. It has no connecting digit. A number taken from some schedule is directly attached to the host class number. This is indicated by the clever "divide like" note scattered all through the scheme. Ed 17 gives a summary list of these in pages 1505 to 1514 under the heading of "Synthesis of Notation". The following example is given in Section 3.353 2 of the Editor's Introduction. It relates to the following "divide like" note

234.16 Sacraments. *Divide like* 265.1 — 265.7. Where
265 Other rites

- 265.1 Baptism
- 265.12 Infant baptism
- 265.2 Confirmation
- 265.7 Anointing of the sick
- 265.92 Consecrations and dedications

The host class number is said to belong to "Primary Sequence". The number in "divide like" is said to belong to "Secondary Sequence".

The example in the Introduction reads as follows:—

- | | | |
|---|-------------|--|
| 1 | 265.1-265.7 | Full span of secondary sequence |
| 2 | 265.12 | Number in this span for "infant baptism". |
| 3 | (265.) 12 | Cancel all repeating digits of secondary sequence. |
| 4 | (234.16) 12 | Substitute repeating digits of primary sequence. |
| 5 | 234.161 2 | Described number |

Strictly speaking, this is not a case of Facet Device, but that of Subject Device of a modified kind. But some mistake it for Facet Device. There is no doubt that this "divide like" device saves a considerable amount of schedule length. It is good that the Editor of Ed 17 has seen in this what I call "Synthesis in the Notational Plane" after the completion of the "Analysis in the Idea Plane".

491 ALMOST ENUMERATIVE CLASSIFICATION

The two schedules for common isolate facets occupy only 8 pages and 24 pages respectively. The Standard Division Isolates are about 100 in number; and the Geographical Isolates are about 6,000 in number. The schedule of Main Divisions equivalent to Basic Subjects, to which the common isolates can be attached, occupy about 1,100 pages; and they are about 20,000. Thus, though most of the subjects are enumerated in a single schedule, two short schedules of Common Isolates are provided. For this reason, DC is described as "Almost Enumerative" instead of as "Enumerative".

5 UDC: ALMOST-FACETED

51 COMMON ISOLATE FACETS

UDC provides for the representation of four species of Common Isolate Facets in the class numbers of the subjects presenting them. The term 'Isolate' is denoted by the term

'Auxiliary' in UDC. Each of the species has its own distinctive connecting digit as shown below:

Species of Common Isolate	Connecting Digit
Form	(0...)
Geographical	(...)
Time	"..."
Point of view	.00

Language Isolates and Race and Nationality Isolates do not amount to Common Isolates though they are described as "Auxiliaries".

52 BASIC FACET AND SPECIAL ISOLATE FACETS

The UDC provides also schedules of Special Isolate Facets. The isolates in any one such schedule is available for use in combination with a specified group of basic subjects only. UDC denotes these special isolates by the term 'Special (auxiliary) Subdivisions'. The following table gives their more specific names and their connecting digits.

Kind of Special Isolate	Connecting Digit
Special Generality Isolate	.0
Analytical Division	-
Synthetic Division (Generally for Substances)	' (apostrophe)

53 ALMOST-FACETED CLASSIFICATION

Let us denote by the term 'Compound subject' a subject made of a basic subject and one or more isolate ideas. In spite of several schedules for the three varieties of special isolates provided by UDC for forming compound subjects, the major part of its main schedule is based on the 'Main Table' of DC. It, therefore, consists of not merely basic subjects but also hundreds of compound subjects. This schedule of basic and compound subjects has not been separated out into a short schedule of basic subjects and the respective schedules of special isolates needed

for forming the different compound subjects given in the main schedule. Thus, the special isolate facets in UDC are only like veneer applied to the DC core of compound subjects. For this reason, UDC is described as "Almost-Faceted" instead of "Faceted".

6 VERSIONS 1 AND 2 OF CC: RIGIDLY-FACETED

CC is the first fully-faceted scheme designed for classification. Its schedule consists of:—

1 A short schedule of basic subjects without any admixture of compound subjects;

2 Six schedules of common isolates; and

3 Scores of schedules of special isolates for use in classifying the compound subjects going with the basic subjects—in general, one set of distinctive special isolates going with one basic subject. But all was not well in the early stages of its development. It was beset with notational rigidity. It came to light only as the number of facets in compound subjects increased. After the practice of depth classification began, the rigidity became serious. The slow overcoming of this rigidity is explained in Sec 62, 63, and 7 of this Paper.

60 VERSIONS OF CC

Viewed from the angle of provision of schedules of special isolate facets for the compound subjects going with the respective basic subjects, the following versions of CC may be recognised:—

1 Version 1.— Ed 1 (1933) to Ed 3 (1950);

2 Version 2.— Ed 4 (1952) to Ed 6 (1960); and

3 Version 3.— Forthcoming Ed 7. (This is being already brought into use since 1964 in the schedules for depth classification being published in the quarterly *Library science with a slant to documentation* and in the *Papers* of the Annual DRTC Seminars.)

61 COMMON ISOLATE FACETS

CC provides for the representation of six species of common isolate facets in the class numbers of the subjects presenting them. In Ed 1 to 4 the term 'Common Isolate' was denoted by the term 'Common Subdivision'.

611 ANTERIORISING COMMON ISOLATE

One of the species of Common Isolates has no connecting digit. This species is called 'Anteriorising Common Isolate'. The first digit of its number is a Roman small. It is invested with anteriorising quality. For example,

'Ba Bibliography of mathematics' precedes — that is, is anterior to — 'B Mathematics'; and

'L45;421m Periodical on pulmonary tuberculosis' precedes — that is, is anterior to — 'L45;421 Pulmonary tuberculosis'. Documents represented by class numbers having an anteriorising common isolate number are Approach Documents — that is, documents embodying a special treatment of a subject, such as bibliography, glossary, cyclopaedia, history, biography, and standard of the host subject, which a reader would like to glance through before taking up the ordinary books on the host subject. Viewed from the angle of positive subjects, a subject with an anteriorising isolate has the same extension as the host subject itself. No other scheme provides for the Approach Document to a subject to precede the ordinary books on the subject. When this feature of CC was explained in the FID/CA meeting held in Belgrade in 1954, the engineers and the other professionals welcomed this feature and appreciated its value. In view of this I suggested at that meeting that the UDC also can secure this by declaring that the digit-pair "(0" has anteriorising value.

612 POSTERIORISING COMMON ISOLATE

Each of the remaining five species of common isolates is deemed to be a manifestation of one and only one of one or other of the five fundamental categories — Personality, Matter, Energy, Space, and Time. Accordingly, each has its distinctive connecting digit as shown below.

SN	Kind of Common Isolate	Connecting Digit
1	Time	' (single inverted comma)
2	Space	. (dot)
3	Energy	: (colon)
4	Matter (Attribute and Material)	; (semi colon)
5	Personality	, (comma)

Because of the insertion of the connecting digit, a compound subject consisting of a host subject and a posteriorising common isolate can come only after the host subject. This explains the reason for each of these five species of common isolates being called 'Posteriorising Common Isolate'. For example,

'J381.44 Rice cultivation in India' succeeds — that is, is posterior to — 'J381 Rice cultivation'.

The addition of a posteriorising common isolate decreases the extension of the host subject.

62 SPECIAL ISOLATE FACETS

621 VERSION 1 OF CC

The designing of CC began late in 1924. At that time experience was confined to the classification of macro subjects only. Even there, it was confined only to classification by DC. It was then only half a century after the design of DC. And yet, books embodying subjects with three or four facets had already appeared in abundance. These could not be given co-extensive class numbers. There were only two ways of meeting the situation. One of them was to choose forcedly only one isolate facet for representation in the class number and omit the others. This forced choice and omission led to different practices in different libraries. Merrill's *Code for classifiers* (1928) gives a survey of such different practices. The second method was to represent all the facets in the class number, and freezing all the isolate numbers except the last one. This resulted in unhelpful sequence among subjects. Therefore came the feeling that the class number should be made to represent all the facets and at the same time freedom should be kept for the isolate numbers in all the facets, and not merely in the last facet, to be lengthened by the addition of digits. It was found that this could be managed if a connecting digit with ordinal value between those of '0' (zero) and "1" (one), could be inserted between two consecutive isolate numbers. The digit ":" (colon) was chosen for the purpose and invested with an ordinal value between those of '0' (zero) and '1' (one). After making this decision, the main entries in two printed classified catalogues then available in the Library of the School of Librarianship of the University College of London, — those of the Carnegie Library of Pittsburgh and of the Mitchell Library of Glasgow — were examined. The facets presented by the compound subjects were noted. Further, the facets not represented were also noted. This led to the concept of a facet formula of special isolates to be attached to each basic subject. A schedule of basic subjects was constructed. Schedules of special isolates were also constructed for each basic subject. On the basis of these provisional schedules, class numbers were constructed for a large assortment of subjects in the two catalogues mentioned above. Class numbers were also constructed similarly for the books announced in a few monthly issues of the *Publishers' circular*. In this way, the facet formula for each basic subject was made to have as many facets as were demanded by the books published till then. The subjects not presenting all the facets

fell into two groups. In Group 1, only the end facet or two or more consecutive facets at the end of the facet formula were absent. These gave no difficulty. But in Group 2, one or more intermediate facets were absent. To avoid the formation of homonyms in the class numbers, each of the intermediate absent facets had to be represented in the class number by the connecting digit ':' (colon). This led to an ugly cluttering of consecutive ':' (colons) in the class numbers of a small percentage of subjects. It was felt that this was due to the rigidity caused by a pre-determined facet formula to be conformed to by all the compound subjects going with a basic subject. Thus, Version 1 of CC was Rigidly-Faceted to a severe degree.

622 VERSION 2 OF CC

This severe rigidity of a pre-determined facet formula was all along throwing a challenge. A way of lessening the rigidity was found in 1949. It was made possible by the Postulate of Five Fundamental Categories and the provision of different connecting digits for the isolates deemed to be manifestations of the different fundamental categories. This result was given in Vol 1 of the *Abgila*. The rigidity was further reduced in 1952 by the Postulate of Rounds and Levels. This result was given in Vol 2 of the *Abgila*.

63 RIGIDLY-FACETED CLASSIFICATION

The results of these Postulates were incorporated in Ed 4 (1952) of CC. Ed 6 (1960) still continues in the same state. In this version the rigidity disappeared in respect of Rounds. But it persisted in respect of Levels within a Round. For, the number and the succession of levels had to be pre-determined and the schedule of special isolates had to be provided for each one of them. If any intermediate level was absent in a subject, cluttering of connecting digits was necessary. Till 1963, it looked as if this rigidity could be removed, if and only if, a distinctive connecting digit could be improvised for each of any number of Levels in a Round. This was beyond practicability. Therefore, the rigidity of a pre-determined facet formula persisted. For this reason, Versions 1 and 2 of CC are described as 'Rigidly-Faceted'.

7 VERSION 3 OF CC: FREELY-FACETED

71 REMOVAL OF RIGIDITY IN RESPECT OF LEVELS

From 1963 onwards, an attempt was made to remove the persisting rigidity by work in the notational plane. The concept of old Octave Notation was replaced by the concept of the ver-

satile Sector Notation. The first findings of the Sector Notation were published in the *Annals of library science* in 1963. A more productive set of findings were published in *Library science with a slant to documentation* in 1964. Sec HD4 of Ed 3 (1967) of the *Prolegomena to library classification* gives a list of 51 sectors. These make possible to have 51 distinctive Levels within a Round. This may prove sufficient for the foreseeable future.

72 SUPERIMPOSITION OF ISOLATES IN [1P1]

A new methodology for the construction of depth schedules was established in 1963. Since then depth schedules have been constructed for the classification of compound subjects going with each of several basic subjects. On account of their great industrial importance, most of the schedules constructed relate to the basic subject Production Engineering. It has been found that the Universe of any particular Commodity—whole commodity—has to be classified on the basis of a very large number of Qualifiers. A Qualifier is a characteristic of division and classification that yields only groups and classes of whole commodities. For example, the Universe of Screws requires 17 qualifiers. The largest numbers of qualifiers, we have come across till now, is 221. This has been in the case of the Universe of Motor Vehicles. In these cases, the qualifiers themselves are to be represented by digits, as if they were isolates. Therefore, the qualifiers are called Quasi Isolates. Super-imposition of quasi-isolates—that is, the qualifiers—is the method used to represent a sub-universe of whole commodity derived on the basis of two or more qualifiers. This turned up as a serious new problem in the design of depth classification. But the Sector Notation meets the situation admirably without any trace of rigidity. When the number of qualifiers to be super-imposed exceeds 51, the qualifiers are represented not merely by the first digit of the sector but also by the later digits to the extent necessary. Here are five examples taken from Paper H by A Neelameghan, M A Gopinath, and P H Denton published in the June issue of this volume.

- 1 Motor car, Racing-Plastic body
D93C1 ,ZK1 -95
- 2 Motor car, Ford Mustang-Passenger transport-Petrol engine
D93C1 ,(F=M) -ZB -X1
- 3 Motor car, Vauxhall Viva 1966-Petrol engine
D936C1 ,(V=V=66) -X1
-Unitized body construction-PVC Seat cover
-9ZY -9t5

—Rack and pinion steering
—w8

- 4 Motor car, Van Dome's DAF—Amphibian—Marshy terrain
D93C1, (V=D) —ZVP —Z5F
—Mountainous terrain—Gradient climb 60%—Dry weight
100 cwt
—Z57 —Zz60 —ZuB10
—Mean maximum speed 25 mph—Petrol engine—Four stroke
—Zj25 —X1 —M4
—Two cylinder—Automatic transmission
—L2 —zk6

The following is an extreme example requiring the superimposition of 100 quasi-isolates. The sequence of quasi-isolates is presented in a column to facilitate distinguishing groups of the quasi-isolates and sensing the helpfulness of the sequence of groups.

Grouping of quasi isolates by	Superimposed Isolate Terms and Numbers
Brand	Motor car D93C1 —GT Bond —(GT=B)
Weight	—Laden weight 18.3 cwt—Kerb weight 15.3 cwt —ZyB18=3 —ZwB15=3 —Weight distribution on rear axle 43.7% —ZsH43=7 —Weight distribution on front axle 56.3% —ZsB56=3
Dimension	—Overall length 13' 1"—Overall width 5' —Zr13=1 —Zn5 —Ground clearance 6' 7"—Overall height 4' 5" —Zm6=7 —Zk4=5
Speed	—Maximum on top gear 15.8 mph —Zh4B15=8
Power supply	—Battery (12v—38 amp) —Zc10(b12—a38)
Engine	—Petrol engine—Maximum power 63 bhp at 5,800 rpm —X1 —S63A58 —Maximum torque 67 lb-ft at 3,500 rpm —P67A35

Grouping of quasi isolates by	Superimposed Isolate Terms and Numbers
	-Compression ratio 9 to 1-Cylinders 4 -N9 -L4
	-Bore diameter 2.73"-Displacement 70 cu in -K2=73 -H70
	-Stroke distance 3" per sec -G3
	-Carburetor 2SU brand-Fuel Pump AC operated -CH2SU -CB66
Oil filter	-Full flow-Renewable -C8 -C1
Valve gear	-Overhead-Pushrod and rocker -BCB -BC1
Body	-Double back-bone frame -9ZV -Fibre glass reinforced panel -9ZJ4
Seat	-PVC headlining -9s5
Suspension	-Rear (Independent swinging axle-Transverse leaf spring-Telescopic damper) -770(25-zW8-zS2) -Front (Independent Kingpin between double wishbones-coiled spring-Antiroll bar-Telescopic damper) -710(23-zWM-zS6-zS2)
Wheel	-Wheel base 7' 7.5"-Front and rear track 4' -zL7=7=5 -zJ4
Rim	-Pressed steel disc-Diameter 3' 5"-4-stud fixing -zC -zB3=5 -z94
Tyre	-Dunlop C41-Tubeless-Size 5.2-13 -z1D=C41 -zzU -zz5=2A13
Transmission	
Gear box	-Synchronesh type-Forward speed 4 -zxE -zu4
Gear ratio	-Reverse 15.4 to 1-Top 4.11 to 1-Third 5.73 to 1 -zt15=4 -zsE4=11 -zsD5=73 -Second 8.87 to 1-First 15.4 to 1 -zsC8=87 -zsB15=4

Grouping of quasi isolates by	Superimposed Isolate Terms and Numbers
Steering	<ul style="list-style-type: none"> -Hypoid bevel gear-Final drive 4.11 to 1 -zr1 -zn4=1 -Disc-type single clutch-Dry-Diameter 6.25" -zf1-ze4 -zc6=25 -Rack and pinion-Steering wheel diameter 15" -w8 -u15 -Turning circles lock-to-lock 3.5 -r3=5 -Diameter of turning circles between curbs 25' -pJ25 -Diameter of turning circles between walls 28' -pC28
Brake	<ul style="list-style-type: none"> -Girling -kZG -Rear wheel brake (Drum diameter 7"- Shoe width 1.25"-Swept area 55 sq in) -kR0(M7-G1=25-D55) -Front wheel brake (Disc diameter 9"- Shoe width 1.25"-Swept area 144 sq in) -KQ0(N9-G1025-D144)
Safety provision	<ul style="list-style-type: none"> -Head light 50 watts -fH10(B50)
Windshield wiper	<ul style="list-style-type: none"> -Single speed-Self parking-Shock absorber -f1U -f1T -f1H
Comfort	<ul style="list-style-type: none"> -Heating facility-Fresh air ventilation -c44 -c31 Single speed fan-Interior carpet trimming -c123 -b54
Maintenance factor	<ul style="list-style-type: none"> -Fuel tank capacity 10 Imp gallons -aR10 -Cooling system oil 9.5 pints -aN9=5 -Engine sump oil 7 pints -aM7 -Oil change every 6,000 miles -aK60

Grouping of quasi isolates by	Superimposed Isolate Terms and Numbers
	-Final drive oil 1 pint -aG1
	-Slip differential oil change every 12,000 mls -aF12
	-Gearbox oil 1.5 pints -aC1=5
	-Grease application 4 points every 6,000 miles -aB4B6
Tyre pressure	
Full load driving	-Rear 26 psi-Front 24 psi -za7H26 -a7B24
Fast driving	-Rear 26 psi-Front 24 psi- -a3H26 -a3B24
Normal driving	-Rear 22 psi-Front 22 psi -a1H22 -a1B20

Note.—The large number of quasi isolates presented by the subject in example 5 should not be taken as typical. But such a subject is rare. It is given to show only the capacity of Version 3 of CC to give co-extensive class number even to a very complicated subject. Normally, the number of quasi isolates presented by a subject is a few. In this connection see the following papers:—

1 Neelameghan (A) and Gopinath (M A). Pragmatic approach in the design of a depth classification schedule: A case study. (Lib sc. 2; 1965; Paper C).

2 Parthasarathy (V V). Combination of quasi isolates: A case study. (DRTC Seminar [Papers and proceedings]. 3; 1964; Paper E).

3 Raghavendra (M K). Refinement technique in the design of depth classification schedule: A case study. (DRTC Seminar [Papers and proceedings]. 3; 1964; Paper F).

While the rigidity due to pre-determined facet formula and that due to Levels in a Round took several years for removal, the discovery and removal of the rigidity in respect of superimposition were simultaneous in the development of Version 3 of CC.

73 ABSENCE OF RIGIDITY IN VERSION 3 OF 3 CC

As far as can be seen, Version 3 of CC imposes no pre-determined number of facets for a compound subject. Nor does it impose a pre-determined number of isolates within a facet, that can be superimposed. They are left quite free. If a facet formula is given, in respect of any basic subject, in a simplified version of CC for the classification of macro documents, it is only as a remembrancer to an ordinary classifier about the possible facets likely to occur in the compound subjects. It should be strictly understood that it is not a case of pre-determination of facets. Indeed, it should now be clear that facets belong to compound subjects and not to basic subjects. A basic subject is itself only a facet in a compound subject.

74 SAME PATTERN OF FACET SEQUENCE IN ALL SUBJECTS

A compound subject has full freedom to have any number of facets. When the facets are separated out and identified in the idea plane, their sequence is determined for representation in the class number on the basis of Postulates and Principles for Facet Sequence. The roots of the sequence so determined run to the near-seminal level. Indeed, this sequence of the facets is in accordance with what may be called the Absolute Syntax of isolate ideas, naturally preferred by the majority of thinkers. No rigidity is enforced on their sequence by the notational system. The sequence of facets imposed by the Principles for Facet Sequence happens in the idea plane itself and not in the notational plane. Unless the pattern of the sequence of facets is determined in the idea plane and it is the same in all compound subjects and it is according to stated Postulates and Principles, the sequence of the subjects themselves will prove unhelpful—indeed, it will be chaotic.

75 FREELY FACETED CLASSIFICATION

Thus, Version 3 of CC forms a Freely Faceted Classification.

8 CONCERTED RESEARCH IN CLASSIFICATION AND COMPUTER

The name of a subject should be fed into the memory of the Computer used for document search, in the form of its class number individualising it on the basis of a Freely-Faceted Scheme for Classification, instead of its name in a natural language or even technical terminology. Then, the computer can give better service. It can avoid the omission of any relevant document or the inclusion of any irrelevant one. If a reader is not able to specify each of the later facets of his subject, the computer can

present to him the main entries of all the documents answering to the facets he has specified. Thereafter, the computer can also be ordered to arrange the selected entries in a classified sequence. This will secure for the reader the opportunity for browsing, as the classified catalogue does, and thereby formulate his subject in precise terms in all its facets. This of course assumes that mistake would not have been made about the basic facet or about the isolate facets having the greatest bond strength. The Theory of Bond Strength is explained in Chap V of Ranganathan's *Descriptive account of the Colon Classification* (India, 1967) and (USA, 1965). Further, a separate computer can be kept for each basic subject and perhaps even for some compound subjects. Then the whole computer need not be worked for each search. This will increase the lifetime of the computer; this in turn will lead to a considerable economy. To make further improvements, continuing concerted research is necessary in the fields of Design of Classification and of Building the Computer. It is only when classified catalogue is constructed on the basis of a well-developed Freely Faceted Classification and the computer is developed so as to take into its memory the main entries of such a catalogue that the relative cost and viability of document retrieval with the classified catalogue and the computer respectively can be compared on a sound basis. So far as the time required by a reader for document retrieval is concerned, the difference would be negligible.