CHAPTER V

DEVELOPMENT OF SPECIAL CLASSIFICATION SCHEMES

Knowledge is dynamic and continuous, there is a continuous influx of new ideas and subjects. The older bibliographical schemes have always found it difficult to keep pace with the changes in the field of knowledge, for, in attempting to list every branch of learning and to provide complete class-marks for nearly all the subjects shown, they are virtually out of date as soon as they appear. The libraries following these schemes are reluctant to adopt the revised editions and to change their arrangement drastically. Another disadvantage is that they offer a fixed hierarchy in each subject field, which is often only one of several hierarchies which exists. The exact classification of many documents is thus prevented.
The inherent rigidity of structure of the traditional enumerative schemes, has made one sceptical with regard to the future of books classification. However, through the analytical approach which recognizes the basic facets, or categories, produced by the application of "characteristics of division" to each subject field, provides for the combination of concepts from these categories in such a way that any subject may be specified, it has become possible to classify accurately, through the use of a faceted scheme, many pamphlets or periodical articles with extreme specificity.

It was Dr. Ranganathan who first initiated modern ideas concerning subject analysis and arrangement, and put forward, in a tentative form, in his Colon Classification. The main principle behind his scheme (as discussed in the earlier chapters) is the listing of basic concepts, arranged in appropriate categories or facets and class numbers are made through analysis and synthesis. The classificationist, in making such a synthetic scheme first needs to survey the literature of each subject field and to divide it up according to different characteristics. In any class, the total divisions arising from the application of a single characteristic constitute one facet. The individual members of each facet, isolated by the dividing process, are described as foci or isolates.¹

¹A.Maltby, op.cit., p.54.
The Colon Classification is, so far, the only general scheme with a completely faceted structure. Unfortunately, according to C.D. Needham, "it is a complicated classification in many ways; this is due largely to the fact that it has endeavoured to keep pace with the rapidly developing theories of its author."²

Ranganathan's views were not seriously considered outside of India until they were put forward as a new and more satisfactory basis for book classification by Palmer and A.J. Wells in 1951.³ Faceted method has now been accepted as a tremendous improvement on the principles employed by the classifications, which are, at present, widely used. However, these new methods are at a disadvantage for they have been given little opportunity to prove their worth, as most of the general libraries are firmly committed to the Decimal Classification or other basically enumerative systems.*

Modern classification theorists today have to pay a lot of attention to the problem of arranging complex books and documents. Librarians working in special libraries particularly have to confront volumes which deal, not with one field of activity, but with the inter-relationship between two subjects fields.

³A. Maltby, op.cit., p.56.
*However, special libraries have found it more convenient to follow a classification with a faceted structure.
For example -

1. Mathematics for Biologists.
5. Handbook of Chemistry and Physics.

Volumes which deal with the interaction of subject disciplines, or the impact of one subject upon an entirely different one. Modern theories have tried to deal with them by means of Ranganathan's -- phase analysis.

The subject analysis of documents is certainly being put on a much firmer and more accurate basis by the discovery of the faceted approach and the clear recognition of the problems presented by complex, or multiphasered documents. Ranganathan's contribution to the introduction of new ideas in the field of classification is undeniable and enormous. Any new classifications which are coming into being tend to be faceted and adopt phase relationships. Colon is at a disadvantage, it being a pioneer scheme which introduced new methods. Besides Ranganathan, useful ideas and developments have been contributed in recent years by British enthusiasts like J. Mills, D.J. Foskett, B.C. Vickery, Barbara Kyle, Farradane to mention a few.
Dr. Ranganathan always laid emphasis on the fact that we should not be content to rest on the achievements in classification gained by the 'giants of the past', but to press on with the work of improving systems and principles and to see that organizations such as UNESCO, IFLA, and the International Federation of Documentation are convinced of the need for exploration and improvement in library classification. 'The library profession', he writes, 'should become more aware of the crumbling of the present foundations of classification.'

In Great Britain the most active team so far has been the Classification Research Group or the C.R.G. The group has been extremely proficient in examining the foundations of the existing general schemes, and in helping to develop the newer principles laid down by Dr. Ranganathan, in re-examining the role of notation, and in creating completely faceted schemes for certain areas of knowledge. The C.R.G. was initiated in 1952 and its work and progress is reported in special bulletin's in Aslib's Journal of Documentation. The Group claims that it has no definite allegiance to any published scheme, and by 1955 it was

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convinced that a faceted classification should be the basis of what are 'information retrieval system'. The early work of C.R.G. is reflected in Sayer's Memorial Volume\(^5\) and occasional summaries of discussion are published as 'GRG Bulletin in the Journal of Documentation'.

**FACETED SCHEMES OF CLASSIFICATION:**

Faceted schemes of Classification compiled by members of the Classification Research Group:

2. Occupational Safety and Health Scheme by D.J. Foskett, published in 1957 (Facet Analysis).
4. Insurance by Pendleton.
5. Office Management by J. Mills.
6. Social Science by Barbara Kyle.
7. Soil Science by Vickery.
9. Metallurgical system devised by special libraries Association and the American Society of Metals.
10. Scheme on Patent Literature by T.N. Ball.
11. Chemical compounds by G. Ma colin.
12. Class for Rubber by Dawson.

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15. Library Science Classification Scheme.

SPECIAL FACETED SCHEMES OF CLASSIFICATION:

The basic teaching of analytico-synthetic classification is that any compound subject, however complex, can be broken down into its separate components, or facets, and that these can be reorganized consistently into a standard pattern by reference to a general decision-making model.

K.G.B. Bakewell writes,

A special classification scheme may mean a 'general' scheme designed for a particular purpose, or more usually, a scheme designed for the classification of documents within a particular subject area. Most of the special schemes show the influence of Ranganathan's faceted approach.⁶

In this chapter the investigator has examined specific subject classification schemes namely, Kyle Classification for Social Sciences, Farradane's Classification for Diamond Technology and Foskett's London Education Classification.

Barbara Kyle:

Since April, 1955, Barbara Kyle worked on a classification of Social Sciences, to be used in the various bibliographies of the Comité International pour la Documentation Des sciences sociales de l’Unesco. Miss Kyle while discussing the general order of her classification and Ranganathan’s categories said, ‘The arrangement of the main classes must vary according to the user or the observer. At the present stage we are attempting to create classification systems for special categories of users. Therefore, a preferential arrangement for the main classes for a general classification cannot be established by an arbitrary decision as to what represents the smallest common denominator of user’s interests’. Fundamentally, this expresses the ‘philosophy’ which forms the basis of all the CRG Classification schemes. They are specialized very ‘pragmatic classification systems’.

Farradane:

J.E.L. Farradane has tried to solve the problem of relationship in an original way. On the basis of the work of certain psychologists, he distinguished nine relationships obtained by correlating two series of characteristics out of

7 Eric De Grolier, op.cit., p.99.
which the first is concerned with the 'temporal' nature of the relationship. Farradane, uses, to indicate each relationship a symbol composed of two signs, which he calls the 'Operator'. He also uses square brackets to enable multiple relationships of one concept to be written in linear form.

Foskett:

D.J. Foskett who is the author of several special 'faceted' classification systems, was one of the first to introduce Ranganathan's ideas into England. One of the characteristics of Foskett's classification is that the specific precedes the general and that the long numbers are classed before the short numbers.

Vickery's Faceted Classification has proved to be a valuable guide. Many of those who have compiled special schemes in England and elsewhere have made use of this guide.

Research was also carried out at the College of Aeronautics, Cranfield. This was an ASLIB project on the comparative efficiency of classification and indexing systems supported by a generous grant from the National Science Foundation, Washington. A number of aeronautical documents were classified or indexed in the first stage of the project, by each of the four systems. The systems selected were U.D.C., a faceted classification for aeronautics, an alphabetical list of subject headings, and the uniterm system of co-ordinate indexing.
In Europe, in addition to the work of late Donker Duyvis and other stalwarts engaged in the revision of U.D.C., it is important to note the very significant contributions made to our subject by Eric De Grolier. His work *THEORIES ET PRATIQUE DES CLASSIFICATION DOCUMENTAIRES* (1956)\(^8\) and *CATEGORIES APPLICABLE TO CLASSIFICATION AND CODING IN DOCUMENTATION* (1962)\(^9\) — reports on the Classification Research that is being carried out in different countries of the world.

De Grolier devised a synthetic system of his own — ALSYN (alpha-synthetique) and his plea for the more effective interchange of ideas and for international cooperation in classification was greatly accepted.


\(^9\)Ibid.
Miss Barbara Kyle retired prematurely at the end of June, 1965 from her twin posts on the staff of Aslib Research Librarian and Editor of the *Journal of Documentation*. "Her ill health interrupted a career of singular eclat in the realm of librarianship." ¹⁰

Miss Kyle joined the headquarters staff of Aslib in June, 1962. Earlier to that she had worked at the Paddington, Fulham, and Islington Public Libraries. She had also held the post of Librarian of the Royal Institute of International Affairs (1945) and spent some years in research into the Documentation of the Social Sciences, and made a brief incursion into the world of publishing as Assistant Director of the National Book League.

As Honorary Secretary and then Chairman of the Council, she exerted great influence on the future of Aslib and on the shaping of Aslib's policies.

Mr. Wilson remarks,

To each in turn she brought not only the sparkling personality that caught every eye and ear in any assembly, but an array of gifts that ranged from intellectual brilliance and technical mastery of her job to an intuitive judgment of people and situations and the fervour of totally undivided loyalties. ¹¹


¹¹ Ibid.
Her own theories, and her personal interest in the social sciences, found expression in her own classification* scheme for those subjects.

On no subject was she likely to be more forthright than on classification. Miss Kyle was much disenchanted with the U.D.C., and nor could she wholly identify herself with Ranganathan, though they shared much common ground and was strongly attracted to his work. As most members of the C.R.C. in which she played a dominant role. At the international level she was appointed as Vice-President (representing Western Europe) of the Bureau of the International Federation for Documentation. "She was a forthright and witty speaker at conferences, and rarely was her assessment of needs or priorities at fault" - Wilson.

The writings12 of Barbara Kyle cover a wide range but they are all of a piece, whether it be the obtruse discussion of facet classification or lines of verse like 'Bliss was it in that down to be alive, but to be young was Ranganathan.13

*Unfortunately her scheme still remains as an unpublished work kept amongst the collections of Aslibs Library.


On March 29, 1966 Miss Barbara Kyle died after a long illness, quoting an obituary published in Aslib Proceedings:

In turn, a member of almost every Aslib Committee and of the council, Honorary Secretary, Chairman of Council and, finally, Editor of the Journal of Document and Research Librarian on the staff of Aslib itself, she was also one of the most sparkling personalities and original thinkers that the present generation of librarians can have produced.

TOWARDS A CLASSIFICATION FOR SOCIAL SCIENCE LITERATURE:

While working as a Librarian of the Royal Institute of International Affairs, Miss Kyle became interested in the making of classification schemes as opposed to the operating of the already existing schemes. Her first opportunity came when the International Committee for Social Science Documentation decided (after studying and dismissing for their purposes the Universal Decimal Classification, Library of Congress, Colon and Bibliographic Classification) that they required a special classification for use in their bibliographies of Political Science, Economics, Sociology, and Anthropology, and the means were provided by a grant from the Ruffield Foundation for this and allied work in the field of Social Science Documentation.

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The International Committee for Social Sciences Documentation (ISSD), its working party on classification and Miss Kyle were constantly made aware that (there were irreconcilable differences of opinion and approach, to say nothing of terminology, not only between one discipline and another but also among rival schools and factions within a discipline. However, "the purpose of this is solely to enable people in spite of their different views to find the material for which they search".  

At the meeting of the Bureau of the International Committee for Social Sciences Documentation in 1953, it was agreed that there should be undertaken a study of the rival merits and demerits of adapting an existing classification or creating a new system appropriate to social sciences literature. After a detailed study it was decided that work should be begun on the drafting of a classification specifically for the social sciences.

Defining Facet Analysis, Miss Kyle stated that "Facet-analysis is the break-down of complex concepts into their inherent elements and the affixing of a notation of numeric or alphabetic symbols to these elements. The

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classification maker then builds code numbers, Meccano-like, to represent the various possible combinations.  

The different subjects of study of the various social scientists were broken down into their common factors. These are expressed in a schedule, as

1. methodology and definition of the social sciences and problems of communication;
2. people, population, individuals and groups, formal and informal;
3. activities, psychological, social, political and economic, aims, motives, incentives, abstract ideas, good and bad law.

According to Miss Kyle,

If within each bibliography devoted to a particular discipline, the entries were arranged according to these basic concepts and combinations of them, each reader, after a little practice should be able quickly to locate the material of interest not only in the bibliography of his own discipline but also in the parallel bibliographies dealing with subjects bordering on his field.  

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16 Classification: adopt, adapt, or create? A discussion point. Aslib Proceedings, Vol. 12, 1963, pp. 317-20. (“Miss Kyle points out that “A new general classification based of facet-analysis could provide a schedule of terms and a set of rules to enable each library to use classification in the form most helpful for its purpose).  

18 Ibid.
THE KYLE CLASSIFICATION - INTRODUCTION:

The Kyle Classification (KC) in its broad outline has taken the same path as K.W. Kapp, in rejecting the compartmentalising of Social Sciences into the traditional disciplines of Sociology, Economics, Politics, and so on, and has applied 'facet analysis' to the whole area of Social Sciences as if it were a unity of knowledge, a "Science of Man in Society". As Kapp says:

In order to reach and convey an understanding of human behaviour we need a framework within which the essential elements of culture can be systematically inter-related... it is the interdependence of the various elements of social processes which gives the culture its comprehensiveness and enables it to cut across and to contain the subject matters of all social disciplines.\(^{20}\)

RELATIONSHIP BETWEEN FACETS:

As in the Physical Sciences, advances at the wave front of knowledge in the field of Social Sciences show more and more inter-relationships between facets of subjects that were formerly considered to be parts of distinct fields of study. Thus while for example, CC itself has the letters SZ to represent Social Sciences as a class of partial comprehension of several main classes, Ranganathan follows tradition in asserting that "whatever may be the difficulty in coming to an


\(^{20}\)Ibid.
agreement with the strict contents of Social Sciences, it consists of several disciplines, each being recognized as a main class in the enumeration made by current schemes of classification. Thus he considers that SZ should come between Psychology and T Education, with the remainder as follows:

- U Geography
- V History
- W Political Science
- X Economics
- Y Sociology
- Z Law

The P (Personality) facets of these classes present no difficulty and include Euand, Community, State, Enterprise and Social Groups.

Foskett states,

Although no further work is being carried on Miss Kyle's scheme, the ideas forming its base are certainly worth continuing study. New experience has been gained from the construction of the Kyle Classification, which has not only broken away from the use of accepted 'disciplines', but has also many of the features of a general scheme. It covers several subject fields, and so stands to them in the relation of at least a more general class, even if not covering the whole of knowledge. KC admits of the use of discipline terms, but only in the first section of the Activities Schedule, and not for the main arrangement. The remainder of the schedules consist of the two main facets of Activities and Personalities.

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22 D.J. Foskett, op.cit., p.145.
In KG the departure from tradition is expressed firstly by collecting all 'discipline' terms at the front of the scheme, and secondly by grouping together those activities that are characteristic of different levels of organization. The outline of the Activities Schedule is Physical activities, Psychological activities, Communication, Creative arts, Recreation, Family, Social relationships, Community activities, Organization, Labour, Economic activities, Trading, Finance, Politics, Government, International relations.

Outline of Personality Schedule is

People: Personal Characteristics, Religion, Race, Linguistic groups, Groups, Classes, Obtrusive groups, Structured groups.

Each term appears at only one place in the scheme.

This practice in most precise illustration also occurs in CC, where not only individual terms but also whole facets are borrowed for one class to another.

Example -

(a) In Class W Political Science the second level Personality facet/PZ/, the Energy facet, and the second round Personality facet are all taken from Class V History.

(b) In Class Y Sociology the division for family is the same as those in Class R Philosophy.
### TABLE 5.1

**LAYOUT OF THE KYLE SCHEME**

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Disciplines to be subdivided by (4)</td>
</tr>
<tr>
<td>B</td>
<td>Man: his life and work</td>
</tr>
<tr>
<td>C</td>
<td>Communication of ideas, etc., dissemination, information, theory</td>
</tr>
<tr>
<td>D</td>
<td>Crafts, Arts, Creation</td>
</tr>
<tr>
<td>E</td>
<td>Archaeological studies - Man's arts, crafts and livelihood</td>
</tr>
<tr>
<td>F</td>
<td>Society</td>
</tr>
<tr>
<td>G</td>
<td>Education</td>
</tr>
<tr>
<td>H</td>
<td>Breakdowns, reforms and social services</td>
</tr>
<tr>
<td>I</td>
<td>General studies, way of life, civilization, Culture pattern, society</td>
</tr>
<tr>
<td>J</td>
<td>Organization, management and labour where an industry is to be specified divide by IM, IN</td>
</tr>
<tr>
<td>K</td>
<td>Trade K distribution</td>
</tr>
<tr>
<td>L</td>
<td>Finance</td>
</tr>
<tr>
<td>M</td>
<td>Agriculture and Land</td>
</tr>
<tr>
<td>N</td>
<td>Production</td>
</tr>
<tr>
<td>O</td>
<td>General economies</td>
</tr>
<tr>
<td>P</td>
<td>Politics</td>
</tr>
<tr>
<td>Q</td>
<td>Polling and elections</td>
</tr>
<tr>
<td>R</td>
<td>Local government and administration</td>
</tr>
<tr>
<td>S</td>
<td>Central government</td>
</tr>
<tr>
<td>T</td>
<td>Administration</td>
</tr>
<tr>
<td>U</td>
<td>General political and governmental situation</td>
</tr>
<tr>
<td>V</td>
<td>International relations</td>
</tr>
<tr>
<td>W</td>
<td>Intergovernmental organizations world wide in aim</td>
</tr>
<tr>
<td>X</td>
<td>Limited Nations</td>
</tr>
<tr>
<td>Y</td>
<td>Wars</td>
</tr>
<tr>
<td>Z</td>
<td>Treaties</td>
</tr>
</tbody>
</table>

*(General studies: for area studies see QZ)*
Subject index to Klye Classification

Economics Index
Economics Index
Sociology Index

Explanation and Rules for Use:

A. The parts of the Classification are:

Main Schedules: Main schedules are designated by capital letters A to Z. These schedules represent mainly human activities in an ascending order from B to Z of complexity. Much of what is represented in B to D can be done by one or two men, women or children, without positing a group or community context. F to H represents a higher level of activity because relationships between people as well as whatever else they may also be doing is added.

J to N represents a higher level including a more formal structure in the relationships and an economic (in its widest sense) purpose. Activities in P to T are not necessarily more or less complex than in J to N, but are politically motivated rather than economically. V to Z represents the highest level in that the activities are inter-government.

A, E, I, O, U Schedules are represented by vowels. Because the classification is not primarily arranged by historic and academic disciplines these disciplines are given a special place.

Schedule A (no doubt always incomplete at any given date) is a list of such disciplines. It may be used (subdivided by (4)) for material on the professional discussions of the discipline as such and not for all the subject matter studied by members of a given discipline. ²⁴

A is also used to subdivide (1) CZ, which is the number for the historical development of knowledge into disciplines and the creation of new ones, and (2) GH, for subjects of the educational curriculum.

E. Archaeological Studies:

Man's arts, crafts and livelihood
by period and form E
by region (1) - (3)
1 - 9
Use for general ethnographic and archaeological studies.

I. Way of life and culture pattern:

General studies, way of life, civilization, culture pattern, society I
by period and form (1)/(9)
For example, twentieth century civilization (19)
by region 1/8
For example, African civilization 8

²⁴ Barbara Kyle, op.cit.
C. General economics

Period history divided by country, period and by influence cycle and fluctuation

Automation and economics BNR

U. General Political and Governmental Situation:

Subdivide by period
Country

Miss Kyle writes,

Because the subjects represented in the main schedules proceed from simple to complex, general works covering a whole field come at the end of the detailed parts of that field. For instance, G is Education and the letter G alone is used for theories of education. GY, at the end of the schedule, is used for general studies of the whole educational system (subdivided by period and place).

Each group of schedules representing a level of activity is added up at the succeeding vowel.

Illustration-

B + C + D = E  General studies of man's environment, physical and mental activities and arts.

F + G + H = I  Man's relationships in and to society and groups.

J+K+L+M+N = O  Man's activities in formalised and economically oriented organizations.

P+Q+R+S+T = U  Man's activities in formalised and politically orientated organizations.

V+W+X+Y+Z  are not added up but are on the highest integrative level being relationships not between men but between governments.

25Barbara Kyle, op.cit.
Z, if not required for treaties, may be used for history, which adds up the contents of all the preceding schedules.

2. **Subsidiary Schedules:**

Miss Kyle laid down:

Subsidiary schedules of concepts to be used as subdivisions of the main schedules. These were schedule of persons, individuals, groups and organisations of persons represented by lower case letters b - z; a schedule of things 01-09; a schedule of places represented by digits 1-9; subdivisions of time represented by (i) - (z); subdivisions of form (3) subdivisions for schedule A represented by (4); subdivisions for FT (law) represented by (5-9).\(^2\)

Within schedule b-z (persons and organizations) subdivisions at j and x by schedules 1-9 (geographical divisions) convert these numbers to respectively 'people' and (states) of the given nationality; like 131 is the number for the place Mexico, j 131 is Mexican people, and x 131 the Mexican state.

1. **Notation - Retroactive:**

The notations in the main schedules A to Z and in the personality schedules b to z are both retroactive.* This keeps

\(^2\) Barbara Kyle, *op. cit.*

* A system in which later sequencies of notation in a faceted classification may be qualified by the earlier sequences. Appearance of an earlier symbol shows a change of facet.
the notation shorter and the system is highly mnemonic and each letter in the alphabet though divisible by smaller number of succeeding letters is divisible by a greater number of preceding letters, and we move always from simple to complex activities.

We can construct such numbers as (1), DK BC Meat-eating in infancy (2), DD CH Drinking water in caravans (3), CG BK Dying out of doors. With a non-retroactive notation a symbol would be necessary to show the junction between the two schedules, thus, if C and D also start subdividing at B:

(1) DH : BC Meat-eating in infancy.
(2) DB : CG Drinking water in caravans
(3) CF : BK Dying out-of-doors.

2. Order of Use of Schedules and Tables:

When classifying we use first the main schedules A-Z starting at the highest or most complex level relevant, subdividing by earlier schedules if necessary.

Second, we use the personality schedules a-z in the same way.

Third, we use the geographical or place schedules 1-9.

Finally, we use the (7) to (3) for time and form.

01 to 09, (01) to (09), and (4) to (9) are only used when specifically stated in schedules.
3. Signs of Relationship and their Meaning:

(i) **Retroaction**: Subsuming an earlier number or letter to a later one, means, that the later actively represented uses the former as a tool or modification as in FRCP ≠ Religion using propagation.

(ii) **The Colon 'Influencing'**: The colon used between two sets of symbols means the first activity is influenced by the one following the colon. For example:

HQ Social Change
HQ:BNR Social Change influenced by automation.

(iii) **Oblique Stroke**: Oblique stroke (/) between two symbols means the first activity is operating in the field of the second. For example,

FHN Parent-child relation
FHN/BHJ Parent-child relation in the field of with and possessions.

**Notation**: Commenting on her Notation Miss Kyle stated:

The letters of the alphabet A to H were used for subjects and J to Z for regions of the world: all subdivisions were by digits. It was, therefore, possible to subdivide J 'Great Britain' and R 'China' by all the subjects A to H without confusion. In the first drafts of my own schedule in 1961 used mixed letters and digits. I used mixed letters and digits. In 1957, I used Luha's

(Contd...)
self-demarcating code words as pronounceable syllabic notation, in the 1958 published draft I used mixed notation and for the main schedules used letters only in a retroactive manner.27

After all these experiences of myself (Miss Kyle) I favour (a) expressive notation as far as possible; (b) mixed notation; (c) retroactive notation; (d) syllabic notation.

Reasons for and against each need careful consideration:

(a) The argument against an expressive notation is usually that it breaks down at some stage and therefore is not worth aiming at. This is the whole leaf argument which I do not accept. Whole leafers end up with material in their libraries limited to one language and home-published on the ground that it is possible to cover material in all language from all countries. If, as I believe, expressive, and therefore Mnemonic notation is a help to speed and efficiency, let us use as much of it as is possible.

(b) Mixed notation makes this easier and, provided that one does not hope from letters to digits and back too often.

27Barbar Kyle, Lessons Learned from Experience in Drafting, Kyle Classification. In Classification and Information Controls, ORG, 1969, pp.11-16.
(c) Retroactive notation in one form or another is an expressive notation, use of role-indicators of which it is an example.

(d) Syllabic notation within one working language has advantages both in the mnemonic and communication field, but used internationally may bring more complexities than it solves.  

Example of mixed notation of symbols such as: VUT PEG caf 461 (31) where the capital letters mean activities, lower case = entities, digits = countries, and digits in curves = form, is to me pleasing; whereas VITC CF (GKN) (PL) or 861.045.0034.00012 which might symbolize the same concepts is not. This is a highly subjective judgement and more research is needed on all aspects of notation.

In Conclusion, Kyle Classification as it is also called, instead of beginning the scheme with a canonical set of main classes and proceeding to enumerate the facets of each class, consists of two major facets, "Activities" and 'Personalities', within which all terms are arranged without


29 D.J. Foskett, op.cit.
special regard to whether they 'belong' to Economics, Politics, History, and so forth. The sequence of terms begins with individual human activities and proceeds through families, social groups, commercial and political organisations up to international relations and world organisations.

Some preliminary schedules contain terms denoting Geographical and Historical sub-division, or Space and Time facets. A distinction is made in, for example, between a country and its inhabitants, and between a religion and its followers; this makes a valuable contribution to the grammar of the scheme by enabling the classifier to cope with adjectives as well as nouns and verbs. Works which bear a formal relation to a traditional main class are also catered for in a preliminary schedule which thus gives a general conspectus of the Social Sciences. It also separates material which might well be expected near together. Thus, in a list of items classified by Kyle Classification from the 1957 International Bibliography of Sociology; we find:

**Anthropology and Ethnology**

(1) AF (45) Application of anthropological knowledge to Modern Mass Society.

**Sociology**

(2) AK (471) Methodology, procedures, techniques in sociology and similar general articles, widely separate from the only slightly more specific.
(3) CTY Reason and unreason in the application of mathematical models in sociology.

(4) HQBNQ Comparative studies in anthropology of inter-relations between social and technological change.

"If social sciences are to be treated as a unity, then all the general works should be at the beginning, and that as they must be arranged in some sequence, it should logically be parallel to that of the rest of the scheme."

Miss Kyle's Classification scheme could be made useful not only for the arrangement of a general collection of books but also to a specialist for the arrangement of peripheral material. It would also provide the ingredients from which each specialist could draft a scheme suited to his own purpose. We should have succeeded in making a scheme where any parts of the classification may be used as a subdivisions for any other part, which in this age of multi-disciplinary studies is essential. If at the same time we are able to make a logical structure visible behind the scheme, we shall have minimized the danger that users, in making additions and applications, will twist the classification from its intended shape and then judge its efficiency by the performance of this crippled version. But to ensure that we have not only to make logical development a possibility for each intelligent user, but also to make it likely. The problem here is to make enough clear rules and instructions to prevent misuse, but not to make so many that
on can either memorize them or face the tedium of constantly re-reading them. 30

Commenting on the Cranfield Project Miss Kyle writes:

The results of the Cranfield project allow us to state with some confidence that 'Within the field of knowledge tested, other things being equal, about the same operating efficiency can be achieved by the use of any of the following systems -- alphabetical indexing, uniterms, UDC and a faceted classification.' Further research is required into discovering what 'devices' such as the use of role-indicators, permutation of indexing entries and so on, any of which may be incorporated into any of these systems to make increase efficiency. 31

Quoting Maltby:

"Miss Kyle's system is of special interest for, if we exclude CC, it is the nearest approach to a general faceted classification, in that it covers a large area of knowledge." 32

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30 Barbara Kyle, "Lessons Learned from experience in drafting the Kyle Classification", In Classification and Information Control CRG, 1969, pp. 11-16.


32 Maltby, op.cit, p.34.
He was born on 29.9.1906 in London (England).

Education: University College School: Royal College of Science (Imperial College of Science and Technology); Royal College of Music.


Experience: 3 years research in Physical Chemistry. 1-year research in photographic chemistry. 3 years study of the literature of fats, oils and waxes for preparation of a new edition of my father's standard textbook on the subject. Studied music for 2 years at the Royal College of Music (after playing as amateur for some years). Subsequent professional engagements with BBC, RPC, LSO, etc. orchestras, concurrent with following activities.


*From a personal correspondence with J.E.L.Farradane.
Graduate Student at S.L.I.S. Free-lance Research. He recently retired as Professor from the School of Library and Information Science, The University of Western Ontario, London, Canada and is now residing in London.\textsuperscript{33}

The traditional concept of a library classification scheme as a sequence of main classes based on human activities, divided both in the Natural Sciences and Social Sciences kept in order by linear notation, has been questioned, notably by Ranganathan, whose own Colon Classification provided a pattern for several recent specialist schemes.

Mary Piggot remarks, "It is particularly difficult at present to fit new studies, such as Nuclear Engineering or Communications, into traditional schemes, and there exists an acute desire in scientific and technological libraries for a new general scheme, particularly for the placing of their several 'fringe topics'."\textsuperscript{34}

J.E.L. Farradane's alternative to the division of postulated main classes is a scheme built up from a preliminary analysis of the nine relations "laid down being universal and exhaustive. The subjects are resynthesized by forming 'analets' which combine 'Isolates and Operators' in the required sequence."\textsuperscript{35}

\textsuperscript{33}A copy of Curriculum Vitae received through correspondence from Mr. Farradane.


\textsuperscript{35}Ibid.
The two questions on which the structure of a new scheme would be determined, are namely, (1) what classes, if any? (2) How far should divisions proceed.

The answer to this is approaching classification from the direction not of human activities but of the entities upon which human beings act. The entities would be assembled on 'integrative levels', beginning with fundamental particles and proceeding through entities of ever more complexity up to man and his activities, and giving rise to the studies of Physics, Chemistry, Mineralogy, Geology, etc. Any new general scheme of classification will have to be, to a large extent, relative in its schedules, as in its index.

**Farradane's Theory of Knowledge**:

The rapidly growing complexity of modern knowledge has forced the emergence of the synthetic method, which while able to incorporate the results of the scientific method in its elementary form, has tried to cope with endless possible, justapositions of ideas fostered by, the pace of present-day research and development.

Farradane has always stressed that classification is a theory of the structure of knowledge, and that principles of classification must be based on an adequate understanding of the nature of knowledge. "Classification is not some part of an external 'reality' waiting to be discovered, it is an intellectual
operation based upon mental entities or concepts.\textsuperscript{36}

The \textit{fundamental fallacy} of the philosophic method is that there exists some sort of known 'totality of knowledge, which can be expressed as Main Classes, limited in number whose subdivisions will provide all that is needed.

Knowledge is, however, something that grows continuously from small items into larger groupings and complex interrelations. A 'Main Class' is only a convenient halt in the assimilation of ideas -- a contemporary focus of interest. Reflecting on \textit{Hierarchic Classification}, Farradane\textsuperscript{37} further remarks that it has suffered from a lack of discrimination in the principle of subdivisions applied at any stage; the subdivision is often of the genus to species type, but may also be of the whole to part type, object to properties, or other less justifiable types such as field of study to objects studied.\textsuperscript{38} Often the principles of subdivision are greatly mixed, resulting in obvious irresolution in the \textit{juxtaposition} of the terms at that stage of

\begin{itemize}
\item \textsuperscript{37} Farradane, \textit{"A Scientific Theory of Classification and Indexing"}, J.Doc., 1952, 8, pp.73-92.
\item \textsuperscript{38} Farradane, \textit{"Fundamental Fallacies and New Needs in Classification"}. In Sayers' Memorial Vol. London: Library Association, 1961, pp.120-135.
\end{itemize}
subdivision. The difficulties of multiple location of a single concept according to its interaction with other subject add to the confusion. The need for juxtapositioning occasionally related concepts in some form of synthesis can be seen in the addition of special notations for common subdivisions, or other form numbers or form marks of the U.D.C.

Difficulties have often been faced by classifiers while dealing with "fringe subject material", and in the introducing a particular concept out of facet order. The establishment of facet order remains undefined, and this makes it difficult to decide upon the best facet order in less well defined areas of knowledge.

It is wrong to assume that a general classification can be constructed by the amalgamation of a number of special classifications, only the exclusively 'special' core of each component may be usable; the rest is better placed in other schedules so that multiple location and unintentional cross-classification are avoided.

As already stated Classification is a theory of the structure of knowledge, that is of the relations between different parts of knowledge. Knowledge may be postulated as being of three possible kinds: (1) A priori, (2) Empirical: i.e., directly experienced, and (3) Logically derived by a process of induction or deduction.
The method of induction from empirical data is applied to
the construction of a classification. Items of knowledge are
divided into uniquely definable terms, called Isolates, and the
relations between them, called Operators. Farradane has shown
four basic Operators -- 1. appurtenance, 2. equivalence, 3.
reaction, and 4. causation, using symbols for these operators.
All subjects can be analysed in a linear form, called an Analet.
With the addition of the permissible permutations of such
analets, formed according to simple rules, alphabetical
arrangement of the first terms provide a complete, logical
Subject Index.  

Facet analysis has tended to concentrate on the 'syntax
of the artificial'. Farradane has concentrated principally on
the analysis of categories of relations. He does not start from
an assumed subject field or 'class', but begins with the actual
terms found in the literature used by a particular group of
scientists, claiming that the scientific, inductive, method
works from the particular to the general, he devised his system
was originally the construction of an alphabetical index. He
has introduced the terms Isolate, Operator and Analet into
classification theory. An Isolate is an elementary term, which
may be the name of anything that can exist and behave as a unit

39 J.E.L. Farradane, "A Scientific Theory of Classification
40 Ibid., p.66.
or a world expressing its behaviour: milk, sucrose, bird, glass, migration, cutting. The Isolates are taken from the literature, and originally the user of the system was at liberty to use any term used by an author.

Farradane has stressed the need for a standard set of terms into which author's terms may be translated if necessary.

The relations between term, the operators, form the principal feature of this system devised by Farradane. Farradane base his work on the 'Structure of intellect model of J.P. Guilford, and claimed that what we are classifying is not phenomena themselves but our knowledge of phenomena, and that the structure of such knowledge is made formal by its passage through the mind. The psychology of thinking shows that the mind comes to grips with phenomena through two major mental operations which enable it to fit concepts into a coherent pattern.

These are the recognition of (1) the time basis of the associations of phenomena (i.e., fixed or temporary) and (2) the similarities or distinctness between concepts and patterns.

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42 Ibid., p.124.
In the words of Farradane:

"The learning process involves an evolution or development of thinking from left to right and from top to bottom of the table. The top left relation is a mere awareness of the concurrence of two concepts without further definition of their interaction; the bottom right represents the most developed stage of learning. The categories of relations (classed operators), provide a sort of psychological mathematics by which complex subjects can be analysed and manipulated in a variety of ways." 43

From the co-ordination of these two major operations, Farradane originally derived four categories of relation, or operator; later he added the categories of 'Neither' to each and thus increased the number of operators to nine.

The Operators are used to link words together in formalised statements. Thus, the operator that stands for Self-activity would be used in the subject 'The migration of birds', which would be formalised as two isolates joined by an operator:

Bird/Migration.

These formal statements are called Analets (small analyses). An alphabetical index for a given subject is constructed by making Analets for all the documents, and arranging them first in alphabetical order of the first isolate and then according to the rank of the first operator.

Thus, the subjects listed in the field of education might be coded on these lines:

**Illustration**

2. Moral training/; Aids/= Philosophy/- Teaching.
3. Student/; Learning/- Class size.
4. Special children/- Education/- Teaching/;
   Machines and their sequence in the index would be
   1. Moral training/; Aids/= Philosophy/- Teaching
   2. Special children/- Education/- Teaching/;
      Machine
   3. Students/; Grants/(-) Reports/: Anderson
   4. Students/; Learning/- Class size.

Relational analysis according to this system does not seem easy to comprehend and use. On the other hand, experiments by the C.R.C. in which Analets made by different people for the same documents showed wide variations in form, revealed that these variations arose mainly from differences in interpretation of the actual subjects of the documents. Once the subjects were agreed on, far less difficulty was experienced in reaching agreement on the Analets. This confirms the desirability of having a pre-established matrix or standard set of terms into which the subject of documents must be translated before any codifying takes place. As Farradane emphasizes, natural language

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\(^{12\text{b}}\) D.J. Foskett, *op.cit.*, p.125.
is far too vague and unprecise a tool to be much use in the actual coding process.

Farradane has also demonstrated the value of relational analysis in the building up of classification schemes, and, in particular, of faceted schemes. For example, we take an isolate term \( A \) to represent a subject field, and on examining its literature we find further terms represented by \( B, C, D \) and so on. We can form a number of Analets, and arrange them according to the prescribed sequence of operations; thus acc

\[
\begin{align*}
A / B & \quad A / G & \quad A / L \\
A / C & \quad A / H & \quad A / M \\
A / D & \quad A / J & \quad A / N
\end{align*}
\]

The three terms in each of the three groups \( BCD, \ GHJ \) and \( LMM \) are all related to \( A \) in the same way, as is shown by their following the same Operator. All those terms that follow the same Operator make up a facet.

\*  
The mere construction of Analets does not suffice to bring a systematic structure into subject indexes; if we leave the Analets as they are, the leading isolates will provide the first principle of arrangement, namely, the alphabet.

The new principles are clearly required for establishing as unequivocally as possible the placing of terms together in a given facet, their relative grouping in different section of one facet, and their logical facet order.
Farradane has an answer to the problem of sequence of facets, for if the Operators are always themselves arranged in the same fixed sequence, the terms following them automatically fall into that sequence. Thus the first facet here is that containing the terms BCD, second contains GHJ and the third LMN.

These methods of classification by synthesis have been capable of dealing with subject in clear detail and in complex combinations of such detail. However, the progress made has not been fast enough, and certain enough for many persons who have approached the problems of 'Information Material' from other standpoints such persons have, abandoned classification in favour of for systems of loose correlation of individual concepts especially by mechanical means such as punched cards and computers.

According to Farradane (quoted by Foskett), "The required flexibility can now be obtained by organising permanent co-ordination of groups within the whole structure, and all types of free co-ordination for interpretation of detailed complex subjects, by means of overtly expressed relation". The table of categories of relation is as illustrated:

^Adopted from D.J. Foskett's Classification and Indexing in the Social Sciences, Ed. 3, P. 124.

^45 Adopted from D.J. Foskett's Classification and Indexing in the Social Sciences, Ed. 3, p. 124.
### TABLE 5.3

<table>
<thead>
<tr>
<th></th>
<th>Awareness</th>
<th>Temporary Memory</th>
<th>Fixed Memory</th>
<th>Increasing Clarity of Perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition Concurrent</td>
<td>Concurrency /(-)</td>
<td>Comparison &amp; Self-activity /*</td>
<td>Association /;</td>
<td></td>
</tr>
<tr>
<td>Not-Distinct</td>
<td>Equivalence /=</td>
<td>Dimensional &amp; State +/-</td>
<td>Appurtenance /</td>
<td></td>
</tr>
<tr>
<td>Distinct</td>
<td>Distinctness /\</td>
<td>Reaction /-</td>
<td>Causation or Functional Dependence /;</td>
<td></td>
</tr>
</tbody>
</table>

The columns represent stages of increasing interlinking of concepts with awareness of their repetition in experience, as reinforced by memory. There is either more awareness of two concepts arising together in the mind without remembrance (non-time) or of their being linked on occasion, but only on occasion (temporary), or of always linked with (fixed) the 'time'. The rows, downwards, represent increasing powers of discrimination in identifying concepts. They are either just recognised as Concurrent, or linked by common elements in the ideas involved ('Non-Distinct'), or a fully differentiated concepts which can be thought about more objectively ('Distinct').
Relational Symbols:

(1) The stroke / is a symbol of the existence of some relation between two concepts, and, by the placing of the subsequent symbol, enables one clearly to express the direction of the relation, that is, which term on either side of the stroke is denoted as the relatively subordinate term, the other term being that under primary consideration in a given subject. The practical meanings of the Operators is given as follows:

1. **Concurrence** expresses the mere co-existence of two terms in a subject, which can be found in language by the use of the words 'and' for example, A and B - or in the presence of - A in the presence of B. It can also be used for denoting, for example, bibliographical form, such as Chemistry/(-).

2. **Comparison** is self-expressive (- A in comparison with B). It is also applicable to 'self-activity', which is an activity undertaken without external stimulation, e.g., (1) Man/* walking, (2) Bird/* Migration, (3) Radium/* Radioactivity.

3. **Association** expresses the relation meant by the word 'for' -- tools for the job or process, agent for the process (often said as agent of process), or 'with'-- as Hydrolysis/: Acid. It is also used for ownership, e.g., Government/: Library.

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4. **Equivalence** expresses identity or some degree of it. It often gives the meaning of 'as' for example, molasses used as fodder, or Molasses/=Fodder.

5. **Dimensional** implies the normal relations of Time and Place, at Paris in 1900. It does not however mean dimensions or size, which are physical properties. This operator also expresses 'state' or the temporary conditions of for example, temperature, electrical charged state, nascent state.

6. **Appurtenance** expresses (1) physical properties, e.g., Lead/=Melting point, (2) part of something or permanent constituents, e.g., Bicycle/=Brake, or Linseed Oil/=Fatty Acids. This does not apply to temporary contents, a ball in a box is Ball/+Box.

7. **Distinctness** previously named 'non-equivalence' expresses the realization of difference. It can be used also to express the idea of invitation or substitution, for example, Diamond/=Glass.

8. **Reaction** expresses the action of one thing upon another, or of a process upon a thing or even upon another process, or the meaning of 'B has an effect on A', written as A/-B.\(^4\)

Examples: (i) Sugar/- Acid (if the process term were expressed, this would become Sugar/-Hydrolysis/=Acid); (ii) Iron Ore/=Smelting (iii) Corrosion/=Prevention, (iv) Education/=Television.

9. Causation or 'Functional Dependence implies the relation B arises out of A, or A causes B, but it should express only a direct cause and effect not a complex chain of causation, e.g., not Moon/ Tides, which is more correctly Moon/ Gravitational Attraction/ Tides, though even then intermediate terms are missing. It is used for the production of one compound from another in Chemistry, e.g., Iron Ore/ Iron. It is also applicable to the relation between an author and his book e.g., Author/ Book.

Enumeration of Complex Subjects:

These operators can be used to connect concepts as required for the expression of complex subjects, or 'analets', e.g., Beet/(Juice/ Sugar/ Analysis/ Chromatography/ Solvent/ (Butanol. The Analets can be used for preparing indexes to books or journals, when permutations can be constructed to bring any desired term to the beginning. They can also be used as a basis for the construction of any other type of index or classification, and are especially useful as a basis for special classifications in facet form.

The general structure the Operators can be used as the basis of bringing together the groups of concepts. Only the fixed operators (Association, Appurtenance and Causation) are used since the other Operators are concerned with temporary or even less structurally useful relations. The groups will each have the possibility of relation with other groups by one of three Operators, if such relations can be justified.
Literary Warrant must be used with caution and careful analysis of the material on which collation of groups is to proceed. It is essential to avoid multiple location of terms among groups, and also of groups within the whole structure. It is not to be expected that a single unified structure will emerge. Many groups will contain concepts of wide general applicability, such as physical properties, measuring instruments, types of machinery, geographical locations.

The structures will often be very different from those of hierarchical classifications: the Older Main Class headings often represent unjustifiably complex meanings, e.g., Chemistry is really a branch of study, i.e., the study of chemical compounds and their reactions, Compounds/; Chemistry, and thus belongs, in the proposed new structure, with other learning disciplines, if chemicals are in some secondary position to Chemistry, then the meaning of 'Chemistry' has clearly been changed.

Notation:

The representation of complex subjects in detail inevitably involves long and perhaps complex notations. The future especially for detailed information retrieval, is certain

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to involve the use of machines, for which long notations are no hindrance, and may rather be preferable for accurate representations of subject and for their scanning. The primary task is still of establishing satisfactory and enduring principles of subject analysis, or classification.

Farradane's Scheme for Diamond Technology illustrates the application of his theories into practice.49

Diamond Technology Classification was devised to cover all subjects included in the "Bibliography of Industrial Diamond Applications", the abstracts journal of the industry. The subject proved to comprise three main fields:

1. Diamond production and cutting (mainly industrial);
2. Diamond-tool production; and applications;
3. Other hard material processing.

There were many 'diamond-cut-diamond' types of contexts.

The material was approached by making 'analets', or relationally connected linear representations, of a large number of subjects (from the abstracts journal) of all kinds. Inspection of the results showed clear-cut groups of fixed relations, such as 'Diamond production/; source materials', 'Diamond production/(Processes/; Equipment (for the processes)', and Diamond Production/: Products (gems, workpieces)/(Prospectives.

Similarly, diamond-tool production showed clear groups of dependent groups or facets. The hard material field proved to be complex, being the material to which diamond tools are applied, but also the material for non-diamond-tool applications, and the subject of scientific studies, other technical work, etc. By arranging the subsidiary facets below each main subject in the order of relations (operators)/; , /\, and/\:, and ordering the groups also by other relations e.g., Carbide/- Grinding/; Diamond Cup wheel, where the process applied is secondard to the material worked, a complete logical series of facets are obtained. The operators can then be omitted since the preferred order of the facets takes their place; in a few special cases/subjects may have a different logical order, and some indications of the breaking of the order may be required (e.g., inserting a colon or a stroke), such subjects are mostly those not directly relevant to the field of interest. A few auxiliary schedules for general terms:

1. Geographical.


3. Common Subdivisions.

were added with a different notation, and these terms could be inserted in the linear order wherever required by logic (e.g., the geographical location immediately after the term to which it applies).
Notation: Since it was considered essential to maintain logical order of citation of facets, a special system of using the notation was arranged. Facets were coded in a simple letter order namely, A-W with lower-case letters for subdivisions.

Group A Non-diamond-worked objects.
Group B Non-diamond-worked materials.
Group C processes applied to A or B, was called 'Pre-Facets'.

Main Facets are between D to N concerning diamond source materials, properties, processing, apparatus and products, diamond-tool processes, equipment.

Post-Facets are from P onwards concerning non-diamond tools secondary processes, non-diamond materials and products, and their properties, and scientific and technical studies and instruments.

Example - A given complex subject such as Sintered titanium carbide-polishing -- with diamond paste (Hyprez) -- on a silk-cloth lapping wheel -- for microscopic study would be classified as

Skcc Chm Kmg (Hyprez) Pg em Vj

The above is given in a logical order but the card would be filed first by the underlined Kmg (from the diamond facets
group), and placed in relation to other King cards, by the order of the pre-facets (Bkcc Chm) first, and then further subplaced if necessary, by the post-facets.

The objective of the classification as a diamond special classification is achieved by the card order, but the actual notation maintains the logical expression of the subject, which can be 'read off', thus more accurately, interpolated auxiliary facet terms can be neglected or used as the last principle of sub-placing in the card index.

Once the facets had been defined, all terms arising in the field could then easily all terms arising in the field could then easily be placed in their correct schedules and given appropriate notation. Instructions were also given for interpolations in the notation as required, to cope with the growth of knowledge. The making of a chain index was also specified.

Comparison relation notation was arranged by the use of an asterisk e.g.,

Nv*PeRgc for a comparison of diamond-bonded and carborundum grinding wheels.

Adoption and Use:

Since its adoption by the Industrial Diamond Information Bureau in 1958 the scheme has proved its value especially by

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50 J.E.L. Farradane, *Diamond Technology*, op. cit., p.79.
the speed with which material can be traced and found, though the difficulty with regard to diamond tools is that there are not two different classifications for the use and for the manufacture of the diamond tools, as there are for non-diamond tools. This presents some difficulties occasionally when this distinction has to be made. On the other hand, it is easy to form new groups or headings.

Advantages: (1) Are the speed with which the material can be classified and found, even though it has been classified by two or more persons. A bibliography on 'Diamond-impregnated Cutting tools in the store -- and marble -- cutting trades was compiled in less than half an hour. The scheme has not only been used for classifying articles, trade literature, and pamphlets but also patent holdings, the classification of the latter dates from January 1958 whereas the classification of the other material goes back to 1953.

Recently Mr. Farradane retired from the University of Western Ontario and following is an extract of a letter which I received from him regarding the Diamond Classification Scheme.*

*Extract of a letter received from Mr. Farradane, dated 16th September, 1982.
"The main difference from other faceted classifications was that there were three sets of facets (1) Non-diamond worked objects; (2) Diamond technology and (3) Non-diamond materials. There were also some miscellaneous facets at the end. If used to make a card index (as was common at that time -- 1950's), the documents were indexed by all suitable facets in turn, but filed by the Diamond technology set first, with subordination by the first 'pre-facets' and then by the 'post-facets'. This meant the full detail would be ascertained by the indexed entry, but the cards were located primarily by the main diamond technology facets. All the facets were ordered by the relations between them. Any given facet followed another facet which it 'affected' (e.g., acted on, was part of, was a property of, etc.). Thus if a number of facets were primary to a given facet (which might represent final products) then the 'given' facet would appear much later in the set of facets. The final 'auxiliary' facets were for place & time, and were notated by decimal numbers (the other facets had alphabetic notation).

The scheme was devised for DeBeen Diamond Co., in London, and was used in their library - but I do not know if they still have it. They kept it 'up to date', and found it useful. - I never had criticisms from them, or from the C.R.G. members. I made no later amendments"
Douglas John Foskett, son of John Henry Foskett and Anny Florence Foskett was born on 27th June, 1918. He had his primary education at Bancroft's School, Woodford and passed his B.A. in 1939 from Queen Mary College, University of London. In 1954, he did his M.A. from Birkbeck College, University of London.

Between the years 1948-48 he worked at Ilford Municipal Libraries. In 1948 he was Librarian at Metal Box Company Limited. He remained there till 1957 and was appointed Librarian, University of London Institute of Education.

He was Chairman of Council, Library Association, 1962-63, Vice-President 1966-73, and President in 1976. He is Honorary Library Adviser, RNID since 1965.

Memberships:

He was a member of Advisory Committee on Science and Technology Information during 1969-73, Rapporteur to International Advisory Committee on Documentation, Libraries and Archives, UNESCO during the year 1969-1973. Later he became consultant on Documentation to ILO and to European Packaging Federation Committee member of UNISIST, UNESCO and EUDISED/Council of Europe Projects.

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Based on Biodata sent by Mr. Foskett which the author gratefully acknowledges.

*Foskett was so influenced by Ranganathan's Colon that he adopted the 9th ed. for classifying the collections of Metal Box Library.
Mr. D.J. Foskett has also been visiting Professor to University of Michigan (1964); University of Ghana (1967); University of Ibadan (1967); Brazilian Institute for Bibliography and Documentation 1971; University of Iceland (1974).\textsuperscript{52}

Professor Foskett was married to Joy Ada (nee McCann) in 1948 and has one son and two daughters.

\textbf{Structure of Special Schemes of Classification by D.J. Foskett}

\textbf{Introduction:}

We have witnessed since the late 1940s a veritable 'information explosion', a tremendous acceleration in the collection, reproduction and storage of data and documents in all fields of human knowledge. In the Natural Sciences a great variety of efforts have been made in recent years to cope with this overflow of information. Mechanical and electronic devices for storing and retrieving coded data are under development in a number of research centers and libraries and an increasing attention is given to the logic and efficiency of the classification schemes underlying such efforts. In the Social Sciences very little has as yet been done to sort out the problems raised through the rapidly

increasing production of data and documents throughout the world. UNESCO's International Committee on Social Sciences Documentation has made valiant efforts to control the increasing world literature in the Social Sciences through its annual bibliographies, but these only constitute a first step. The next step, is clearly, to ensure extensive classification in depth and this means essentially to move inside the particular 'information carrier' and to classify its 'hard contents'. Mr. D.J. Foskett's *Classification and Indexing in the Social Sciences* (2nd ed.) informations us about current development in classification and retrieval.

Most general classification schemes discussed have a structure based on logical classification of the Aristotelian pattern — that is, the division of classes, or genera, into species and sub-species by the addition of one different characteristic after another. Classification today means the use of a stereotype set of marks that serve to identify subjects and the relations between them. "A system of analysis for modern specialist literature needs a more complex base, which is able to specify many relations and to co-ordinate concepts in many ways. The classification kits are set about designing systems which will provide the required freedom and flexibility in concept coordination" (D.J. Foskett).
Principles:

The new schemes at last come to grips with the problem of the actual structure of subjects, which they attempt to reflect. The knowledge possessed is organised in a pattern that expresses correctly their many relationships. The analogy of the jigsaw puzzle is a true one. We are given a number of pieces jumbled in a meaningless heap, and by fitting together those parts we finally construct a pattern with a precise and identifiable meaning. Classification and Codification are attempts to provide a system by means of which the list of knowledge can be fitted together.

Special Schemes of Classification formulated by D.J. Foskett:53

1. Classification for Packaging compiled for the European Packaging Federation.
2. Community Development Classification54(Classification for Community Development).
3. London Education Classification in use in the Institute of Education Library.
5. Food Technology.

53Published by International Occupational Safety and Health Information Centre, Geneva, 1960.

54Published in Community Development Bulletin, March, 1962.
Another example of a successful faceted classification:

The London Education Classification by D.J. Foskett which has been used in the Library of the University of London Institute of Education since 1963, and the second edition was published early in 1974. It is also used at the Craigle College of Education, Ayr. The revised schedules have been used as the basis for the EUDISED multilingual thesaurus of the Council of Europe project for educational documentation. 55

LONDON EDUCATION CLASSIFICATION

Introduction:

Although every general scheme of classification contains a considerable number of sub-divisions in the subject of Education, and there exist several lists of headings for compiling subject catalogues, none of these is really satisfactory for the accurate and detailed classifying of educational documentation. The main criticisms that can be made according to Mr. Foskett are:

(a) lack of precise detail.


(b) cross-classification, with provision of more than one place for the same topic without also providing rules for making the choice.

(c) Inconsistencies in the sub-division of several topics by the same, or similar, sub-divisions.

(d) Inadequate machinery for revision, which means a lack of places for new subjects each time a new of the scheme edition is published.

The aim of the "London Education Classification (LEC) is to enable librarians to classify, as specifically as they wish, any subject that may appear in the literature of Education. It is a 'Faceted' Scheme, that is, the terms that are used in the literature have been arranged in a series of groups, called 'facets', each of which represents one particular aspect of the subject". The scheme is based on modern theories of classification, in particular those of Dr. S. R. Ranganathan and the Classification Research Group.

The scheme provides the elementary terms, arranged in facets, from which complex subjects may be assembled. There is no entry in the schedule for a whole subject such as 'The teaching of modern languages in primary schools', instead, separate entries would be found for 'teaching', 'modern languages', and 'primary schools'. The scheme and its rules provide

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57 D.J. Foskett and J.V. Foskett, op.cit.
the terms and the method of assembling them so as to ensure consistency in classifying and accurate specification of even the most detailed topics. By this means, not only are most of the present problems in classifying overcome, but a much better tool is provided for reference service and information retrieval.

Facets:

The facets are established by inspecting the literature, but once established, they can be completed easily enough because most of the terms come readily to mind. It is likely that no classification scheme can ever be complete, but even when new terms are found, their place in the scheme should be clear because the facets are 'mutually exclusive' (Ranganathan).

In logical terms, each facet is made by the application of one distinct 'difference' or differentiating characteristic. One facet in this scheme, however, appears to depart from this rule. The terms in the 'Educands and Schools' facet do not form a homogeneous group in that they are derived from two 'differences' and so combine two sets of divisions into one. It has been found quite understandable to separate the literature on Educands of a certain age from the literature on the Types of School which those age groups. "In this facet a provision is made for further division, if necessary, of each
set of terms, and every term in the facet may be subdivided by other facets".

Limitations of a Special Classification Scheme:

A problem that is inevitable in a special classification is the inclusion of terms that do not strictly belong to the special field. In Education, this causes particular difficulty with Curriculum subjects and with Education:Psychology. On the one hand, the scheme should cope with the terms in the actual literature, on the other, we do not wish to include the whole of knowledge in our Curriculum facet, nor the whole of Psychology in our Curriculum facet, nor the whole of Psychology itself in our Educational Psychology facet with a general scheme. These terms could be borrowed from the appropriate other sections.

Foskett has solved this problem by making a compromise. The curriculum facet includes the subjects most written about, and also enough general headings to cope with the rest of knowledge, though not in specific detail.

Notation:

The primary function of notation in a Bibliographical Classification Scheme is to convey order automatically, to mechanise the arrangement of documents and index entries. The symbols must therefore be either letters or numbers, which have a recognised sequence. In Faceted Classification, the symbols have to identify individual words in the facets. The divisions
of a term within a facet — that is of the same aspect must be kept distinct from the divisions of the term by the additional of terms from other facets — modifying by a different aspect.

In LEC, facets are identified by capital letters, and terms in facets by lower case letters. Capital letters are not used on their own, but signify the beginning of a facet; small letters complete the identification of specific terms, and are used with alternate vowels and consonants. The purpose of this is to make each notational symbol pronounceable.

"A Faceted Scheme readily accepts short groups, and all the symbols have been made pronounceable. Other forms of mnemonics have also been used: alliteration, assonance, verbal similarities of several kinds."\(^5\)

Example -

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bab</td>
<td>Education, general</td>
</tr>
<tr>
<td>Bin</td>
<td>Inspectorate</td>
</tr>
<tr>
<td>Busa</td>
<td>Educational Documentation</td>
</tr>
<tr>
<td>Fab</td>
<td>The teaching profession</td>
</tr>
<tr>
<td>Lib</td>
<td>Teaching aids</td>
</tr>
<tr>
<td>Liv</td>
<td>Visits</td>
</tr>
<tr>
<td>Rix</td>
<td>Exceptional types of school</td>
</tr>
<tr>
<td>Rog</td>
<td>Progressive</td>
</tr>
<tr>
<td>Ruf</td>
<td>'Outward Bound'</td>
</tr>
<tr>
<td>Rur</td>
<td>Rural</td>
</tr>
<tr>
<td>Tab</td>
<td>Exceptional children, general</td>
</tr>
</tbody>
</table>

\(^5\) Foskett, op. cit.
Two other notational devices are used. Geographical locations are shown by the use of a country number after the class number. The symbol of relation used in the U.D.C., the Colon (:) has also been used here. Most relationships are taken care of by the faceted structure, but such concepts as "influenced by" and "compared with" need to be symbolised separately. The influence phase is indicated by a colon. Other relationships are shown by the oblique stroke.

Sequence of Facets:

The conventional arrangement of a classification scheme is that general books precede books on specific aspects of a subject. The order followed in LEC is as follows:

| B | Education, general, principles etc. |
| D | School buildings and equipment     |
| F | The teaching profession           |
| G | School, college and university officers |
| H | School, college and university management |
| J | Educational psychology and measurement |
| K | Students' work                    |
| L | Teaching method                   |
| M/P | Curriculum                        |
| N/S | Educ. and schools                 |
| T | Exceptional children.             |

Most specific is also the most important, and in actually classifying individual subjects, the facets represented by later
letters in the alphabet take precedence over those represented by earlier letters. The recommended citation order is the reverse of the above schedule order, thus:

<table>
<thead>
<tr>
<th>Luv</th>
<th>Resources centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sav</td>
<td>Polytechnics</td>
</tr>
<tr>
<td>Sav Luv</td>
<td>Resource Centres in Polytechnics</td>
</tr>
</tbody>
</table>

K.G. Bakewell observes, "In the first edition the notation for all terms consisted of three letters, the middle one always being a vowel so that the notation was pronounceable with occasionally amusing results."\(^5^9\)

<table>
<thead>
<tr>
<th>Pil</th>
<th>Sex education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cor</td>
<td>Chair school</td>
</tr>
<tr>
<td>Ruf</td>
<td>Outward bound schools</td>
</tr>
<tr>
<td>Sad</td>
<td>Students in higher education</td>
</tr>
</tbody>
</table>

It is partly because of the reduction in the pronounceable element of the notation, which is considered to have a mnemonic value, that Craigie College of Education, Ayr continues to use the first edition.

In the first edition the Colon (:) was used to indicate influence and the oblique stroke (/) for all other relationships.\(^6^0\)

\(^5^9\)K.G. Bakewell, op.cit., p.126.

\(^6^0\)Ibid., p.127.
The University of London Institute of Education now distinguishes five phase relationships, indicated as:

1. General relationships.
2. Bias
3. Comparison and difference
4. Influence
5. Tool

Thus 'a comparison between internal and external examinations' in Jom:3 Jon and 'the influence of punishment on truancy' is Jev:4 Jej.

Classifying:

Classifying (to quote Foskett) "by a faceted scheme is a process of analysis and synthesis. The subject of the book or article to be classified is analysed into its constituent terms, using the schedules of the scheme as a dictionary. The notational symbol for each term is given against the term itself, and the symbols selected are added together to reconstitute the whole subject. Since the sequence of facets is from general to special, and since the literature is grouped at special rather than general aspect, the symbols are listed in reverse alphabetical order in the class number.

Indexing:

Whatever sequences of facets is adopted, it is clear that literature dealing with secondary facets will be scattered.
This is inevitable in a classified library, since a book can be shelved at only one place even though it deals with the complex of subjects. If material is classified first by schools, that on curriculum will be distributed and vice versa. Any classified list or catalogue must call on an alphabetical index to supplement the shelf sequence and collect the secondary aspects together.

This brings to light another advantage of a Faceted Classification, namely, that the act of classifying also selects the headings for the necessary additional index entries, because the scheme does not itself provide *labelled* places for composite subjects and the classifier has to assemble the terms corresponding to his analysis of the subject.

The most economical form of alphabetical index is the *chain index*. Suppose we have a subject with three facets:

1. Illustration:

   **Direct method of teaching foreign languages in secondary modern schools**

<table>
<thead>
<tr>
<th>School curriculum</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary modern</td>
<td>French</td>
</tr>
<tr>
<td></td>
<td>Direct method</td>
</tr>
<tr>
<td>Men</td>
<td>Direct method</td>
</tr>
<tr>
<td>Lem</td>
<td></td>
</tr>
</tbody>
</table>

   The book is shelved with Secondary Modern Schools, but there must be references from Foreign Languages and Direct Method.
in the alphabetical index. The first inclination is to make these entries as permutations of the three terms, giving six entries in all. It is however not necessary to do this, since each entry refers to the same part of the classified sequence. Index entries are therefore made for each term in the chain of terms, in the reverse order from the classification.

2. Illustration:

Direct method: French
Secondary modern school Rid Men Lem
French: secondary modern school Rid Men
Secondary modern school Rid

Each entry refers the reader to the part of the classified section, Rid, where all entries on secondary modern school are filed. It has been suggested, however, that in a card index it is just as economical to make a complete classified entry under each facet, rotating the terms so that each comes to the front in turn.

3. Illustration: Chain index

Direct method French
Secondary modern school Rid Men Lem
French: Secondary modern school Rid Men Lem
Direct method Rid Men Lem
Secondary modern school: Direct method Rid Men Lem

Direct method; French
The major advantage of this method is that there is a complete set of entries at each heading, giving complete information on the first approach to file, so that the reader would not have to refer from the index to other parts of the classified file when looking for literature in distributed facets.

**LONDON EDUCATION CLASSIFICATION 2nd EDITION**

A second edition of the scheme was published in 1974 to make many additions and modifications to the scheme. A complete review and revision of the scheme was made which was stimulated particularly by the development of the European Documentation and Information System for Education (EUSISED) of the Council of Europe, and its form has been considerably influenced by the publication of the Thesaurofacet of Jean Aitchison61 and her colleagues.

**Major Changes**

The major changes of format include the addition of many more cross headings and indentations in the Faceted Classification, and, in the alphabetical section, the development of a system of cross references as **Broader Terms, Narrower Terms** and **Related Terms**.

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Apart from a number of enlargements, particularly in the Foundation Areas of Philosophy, Psychology, Sociology and History, the facets and their sequence are substantially the same. This arrangement has been preserved after a study of several other efforts in the area of categorisation of terms, and this study was published by the Council of Europe in 1973, as DECS/DOC (73)6. A study of the role of categories in a thesaurus, for educational documentation.

LEC is concerned more with the analysis and classification of documents, and not with the philosophical analysis of concepts. A significant difference between philosophical analysis and documentary classification is that, in the former, each specialist tends to regard the whole of knowledge as centring on his own interests, and he is not concerned with the necessity for establishing an objective description of all the terms in a given field for the purposes of documentary classification. In the latter one has to represent what is actually written in documents about Education, because the knowledge to be organised has been crystallized and fixed in words which are printed in a particular document. Thus the classifiers are organising words or terms and not propositions or opinions about the subject and the correctness of opinions about the subject.
Facet analysis:

In the words of D.J. Foskett, "The purpose of facet analysis is to list elementary terms, which have the most chance for being neutral and to achieve higher degrees of specificity by combination of terms, or synthesis."  

For example:

(a) 'Achievement' is given the notation Jbw and is used for classifying and document that deals with Achievement. 'Test' is given the notation Jit. Therefore, the number for 'Achievement tests' would be Jbw Jit.

(b) Personality is Jbz. Personality tests can be synthesized as Jbz Jit.

(c) Design is listed at Butd 'Design of Tests' won't be Jit Butd.

(d) A document on Reading difficulty would be Maj Jbm.

(e) Learning difficulty Iad Jbm.

In applying facet analysis to a subject, the aim is to produce a structure which is helpful to a user, that is that the arrangement it produces should correspond to the way in which he

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62 D.J. Foskett. London Education Classification, 2d.ed.
can reasonably think about his subjects, so that he will find no difficulty in matching the subject of his inquiry to the terms of the index. "The compiler of a Faceted Thesaurus/Classification must therefore have an idea of the structure within a subject so that the location of any term within a particular facet has a reasonable justification".

As indicated by Stephen Pickle, the thesaurus part of the second edition of LEC is being used for a computer-produced catalogue of theses and dissertations, covering all theses, dissertations and diploma reports added to the library since September 1975.

"The ease of amendment provided by the hospitality notation complemented by the structured thesaurus makes it quite easy to update LEC in response to new concepts".

Criticism:

Several criticisms of the LEC have been made, namely: (1) It fails to distinguish adequately between the work of teachers and of students, (2) it has no facet for health and hygiene, (3) its treatment of the Foundation areas is very inadequate. The choice and enumeration of terms has a bias towards Education. The problem is, where does the boundary line occur? In the case

of Psychology, the EEC's original solution was to include only those terms which appeared under the heading of Educational Psychology, in the table of contents of Psychology Abstracts, but this soon proved inadequate and the Psychology facet of the LEC has grown more quickly than any other.

In the schedules of the Faceted Classification, all terms are arranged in a logical order, but entry to the schedules may often have to be through an alphabetical index. The alphabetical section of LEC 2 has been greatly enlarged, not only because of the additional terms in the schedules, but also to include a thesaurus type of relationships indicated by the letters BT, NT and RT -- Broader Terms, Narrower Terms and Related Terms respectively. Under these headings, a full enumeration has been made in this edition. The BT/NT represent the hierarchies within facets, RT represents co-ordinate terms which may appear in different facets.

The Multi-entry catalogue in the London Institute of Education Library has proved very useful. It demonstrates the value of the classificatory approach in providing a systematic grouping shown under main facets in a shelf arrangement. In such a catalogue, a subject which had several facets would receive a class number representing all those facets, "The sociology of reading research would be Maj Bav Baneg". The psychology of teaching in handwriting:
Illustration:

| Mal | Handwriting |
| Lab | Teaching |
| Jab | Educational Psychology |

An entry for the document (sociology of reading research) be found in the classified file under the symbol Ban, where related works on sociology would be found, under Bav where related works on research method would be found, and under Maj where related work on reading would be found. Thus, although a particular document can only be put in one place in a library, index entries for that document may appear in as many places as are desirable for a given group of readers.

Here are a few examples of certain books on Education classified according to Foskett's London Education Classification:

1. Bab Tim Jak
   Educating emotionally disturbed children; reading edited by Henry Dupont.
   Tim Maj Jak Bab

2. Ral Bib Ras
   How children fail by John Holt.

3. Ras Bib
   Administering the elementary school: a co-operative educational enterprise by William C. Reavis and others.
4. How to teach reading systematically by G.C. Quffy and others.
   Maj Lab

5. Effective home-school relations by James L. Hymes
   Bek Jbd Mut

   Ban

7. School and Society: a sociological reader by B. R. Cosin and others.
   Kof Rag

8. Human behavior in educational administration, by Clarence A. Newell.
   Joc Bib

9. Sociology of research
   Maj San Ban

Notation:

The notation of LEC 1st ed. was experimental in that it used a pronounceable form of letter combination, limited to three letters, consonant, vowel, consonant. The basis for this was experience with the tendency of people to pronounce combinations of letters wherever they are pronounceable, as in acronyms. Capital letters were used for facet indicators, lower case letters for terms within facets.
Critics of LECI pointed out the limitation of pronounceable three letter notation, it imposed a severe restriction on the number of places available in the schedules, and was liable to lead to undesirable combinations which had to be avoided, thereby reducing the notation available still further.

Syllabic Notation:

The growth of the subject has shown up these limitations, and therefore the pronounceable three letter system has been partially abandoned. It has been retained wherever possible, but in certain cases a fourth letter has been added, in other nonpronounceable three letter combinations have been used. There has been no great enthusiasm displayed for the pronounceable system, though it has certainly proved to be a useful and highly mnemonic technique for some users. 64

In his review, A.J. Wells states that D.J. Foskett's

The London Education Classification is "the latest special classification to be compiled by Mr. Foskett whose classification interests have ranged from Metal Box Manufacture, Food Technology, Occupational Safety and Health, Packaging Community Development, to Education." This slim volume contrives to be not only a classification scheduled for Education, claiming 'to

enable librarians to classify, as specifically as they wish, any subject that may appear in the literature of Education, but it presents an example of Syllabic Notation as short sample of a 'rotated' cataloguing and an Introduction which itself is a masterly short essay on the theory of classification.65

What is familiar about the scheme is its use of facets or groups of terms representing one particular aspect of the subject which may be combined to form a complex subject. In this, it follows a pattern which, with its roots still firmly planted in the original work of Ranganathan has now become a typically British product. However, whereas some of the earlier schemes of Foskett and others in England to facet indicators and 'expressive' or 'hierarchical' notation they follow the model of Ranganathan's Colon Classification. This scheme dispenses with facet indicators and has constant letter pronounceable 'syllable' for every term. The order of facets is 'increasing concreteness' from general educational problems and activities to particular educational groups and the combination order of facets for constructing complex subjects is retroactive.

What is to be considered; how well has this scheme attained its objective? and what are the virtues of its new devices?

The enumeration of terms in each facet is fuller than in any of the major general schemes of classification, and the terms have a strong British bias. The names of types of school as comprehensive, modern, technical, illateral, grammar and public schools have a specific notation, the names of types of schools in other countries are to be arranged alphabetically, as for example, Lycee and Volksschule.

The grouping of terms is more logical than in the other schemes and, of course, the simple rule of retroactive combination for the parts of a complex subject successfully eliminates 'synonyms'.

Mr. Foskett draws attention in his 'Introduction', to the failure of other schemes to provide adequate machinery for revision, and while it is true that although Faceted Scheme which allows for the combination of terms, gives mostly greater scope for the construction of class numbers by the classifier, Mr. Foskett still does not explain how new terms would be fitted into his facet groups. Ranganathan expounded a theory of 'self-perpetuating classification', using a system of associative fundamental concepts with each digit (e.g., the digit 4 had associated with it the idea of pathology, error, transport etc.)
but it seems inevitable that such a practice will conflict with the canon of helpful order. E.J. Coates abandoning hierarchical notation has suggested taking a digit midway between the two terms between which a new term logically fits.

Mr. Poskett points out that one of the most serious difficulties of a special scheme of classification is the lack of a general scheme to act as background not only for marginal topics -- he instances Educational Psychology, he might have said School Architecture -- but for large sections of knowledge treated in relation to one of the facets of Education, the most serious of all being the many subjects which are the raw-materials for the curriculum facet. There is as yet no solution. The remedy seems to be the production of a new general scheme of classification constructed on principles acceptable alike to the special and the general user, from which the specialist can import facets or adopting the techniques found in the Colon Classification -- Subject Device.

Pronounceable Notation:

The experiment in pronounceable notation is an interesting attempt to break through the psychological barrier.

Extracts from the Schools Council's classified catalogue, arranged by the London Education Classification, showing rotation of facets.
which is so often a hinderance to the successful use of specific classification. This scheme, however, has little of the apparatus of common subdivisions that would be necessary in general scheme. Again it is not sufficient simply to join together the terms from different facets without some interposing symbol indicating the type of relation between the two terms. (For example, Mef Mas stands -- English Grammar and Man Maj -- Reading and Writing, where the relationship between English Grammar is clearly very different from that between Reading and Writing).

The examples which have been worked out as an illustration of the scheme also provide Mr. Foskett with an opportunity to demonstrate the merits of a 'rotated category'. In this category an item is entered under each facet in turn. Thus the subject 'The psychology of teaching handwriting' which is represented by Mal Lab Jab -- where Mal = Handwriting, Lab = Teaching and Jab = Educational Psychology is entered successfully under Mal Lab Jab; Mal Lab Jab and Mal Lab Jab.

Summing Up:

To sum up, A.J. Wells states,

67 A.J. Wells, op. cit., p. 91.
Mr. Foskett's scheme for Education offers for the specialist in this field a schema of the structure of Education more coherent, more logical and more extensive than any to be found in existing schemes.... In its Introduction and its Method of presentation is offered a study of some of the newer techniques for constructing classification schemes; and it is itself a model of presentation which might well be followed by others.