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Primary Basic Subject by Clustering.

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**A Neelameghan, Documentation Research and Training Centre,
Indian Statistical Institute, Bangalore 560003.**

[The formation of Primary Basic Subjects by the Clustering mode is discussed. The result of Clustering is differentiated from certain other varieties of Primary Basic Subjects. The arrangement of Primary Basic Subjects formed by Clustering in a helpful sequence in the schedules of Basic Subjects of the Colon Classification is explained].

1 Scope of the Paper

This paper discusses the formation of Primary Basic Subjects through the Clustering mode. The Clustering mode appears to have similarities with Distillation and Agglomeration modes. The similarities and differences are elucidated. The arrangement in a helpful sequence of the Primary Basic Subjects formed through Clustering in the schedules of the Colon Classification is also discussed.

2 Clustering

In an earlier paper (1) the formation of Subject Bundles — such as, Surface sciences, Ocean sciences, Space sciences, and Defence sciences — was discussed. Further study of Subject Bundles indicates that a Subject Bundle has to be either a Primary Basic Subject or a Secondary Basic Subject. In other words, the process or mode of formation of a Subject Bundle is one of the modes of formation either of a Primary Basic Subject or a Secondary Basic Subject. The name suggested for this mode is "Clustering". There will thus be no separate discussion on Subject Bundles as something apart from Primary Basic Subject and Secondary Basic Subject.

3 Phenomenon Observed at the Document Level

In the past, in the universe of documents, the general trend has been to narrow the extension of a subject embodied in a document taken as a whole. Therefore, there has been a

general tendency not to bring into one and the same document, compound subjects going with different Basic Subjects, except in the case of Complex Subjects involving Phase Relation and subjects involving the use of Subject Device in forming or sharpening isolate facets. In recent years, however, inter-disciplinary team research has often, for practical convenience, necessitated bringing together in one and the same document two or more Compound Subjects going with different Basic Subjects.

For example, for convenience of organising research, the preliminary results and data obtained in the work falling in different subject-fields involved in the study of some one phenomenon or entity, may be brought together in one and the same document and treated disjunctively — that is, without any substantial integral treatment. Subsequent elaboration of the work falling in different subject-fields may be by specialists in the respective subjects and the results may be published separately. The document in which the preliminary results are brought together just as in a collection, taken as a whole, presents a subject-field in which there is a core entity of study with inputs or viewpoints or work on it coming from specialists in subjects going with diverse Basic Subject. This feature is something like a clustering around a nodal idea — that is, forming a group of similar entities, because of their relation to each other, or their simultaneity of occurrence or for convenience in treatment or discussion.

31 EXAMPLES

311 *Area Study*

Consider documents each dealing with one of the following subjects:

Mathematics in China	Education in China
Chemistry in China	Geography of China
Medicine in China	History of China.

The subjects will normally go respectively with the Primary Basic Subjects Mathematics, Chemistry, Medicine, Education, Geography, and History.

A document on "Sinology" (Chinese Studies) may contain contributions on several of the above mentioned subjects as well as on others such as, Science in China, Technology in China, Fine Arts of China, Chinese Language, Religion in China, Chinese Philosophy, Economy of China, Chinese Civilization, etc. collect together. Such a collection was earlier treated as a Subject Bundle at the document level (1). Here, "China" is the core entity of study in each of the contributions. The subject-field of the collection taken as a whole represents a Clustering of subjects around the node "China".

Similarly, Indology, African Studies, Middle East Studies, Latin American Studies, or, in general, subjects falling in the subject-field "Area Study" is an example of this Clustering phenomenon.

312 "Generalia" Person

Consider documents each dealing with one of the following subjects:

- Gandhi's role in the struggle for rights of coloured people in South Africa
- Gandhi's role in the struggle for independence of India
- Gandhian concept of non-violence
- The Dandi March
- Gandhi's humanism
- Gandhi's views on industrialisation
- Gandhi's contribution to world peace.

"Mahatma Gandhi" cannot be conveniently associated with any one particular subject-field unlike a specialist in Physics, or Chemistry, or Psychology, or Economics. Therefore, he is considered a "Generalia Person." In each of the subjects mentioned above, Mahatma Gandhi is the focus of study. It would be helpful if all the documents on Mahatma Gandhi are brought together in a small range. This can be conveniently done if "Gandhi Studies" is viewed on a Clustering of subjects around the node "Mahatma Gandhi". This is another variety of Cluster somewhat dissimilar to "Area Study".

313 Study of an Entity or Phenomenon from Various Angles

Consider documents each dealing with one of the following subjects:

- | | |
|----------------|---------------------|
| Soil dynamics | Soil in agriculture |
| Soil physics | Soil microbiology |
| Soil chemistry | Soil formation. |

Each of the subjects goes with a different Primary Basic Subject and will be classified as such. On the other hand, a document on "Soil science" may contain contributions on the above-mentioned subjects and on several others too, but each having "soil" as the focus of study. "Soil science", therefore, presents a Clustering phenomenon.

In general then, any entity or phenomenon can be the focus of study with inputs from different subject-fields. Interdisciplinary team research has given rise to several subjects of this type during the past decade. A few are mentioned below. More are likely to emerge in the future.

Subject	Core Entity of Study
Study of Future	Future
Study of Time	Time
Study of Energy	Energy
Hydroscience	Water
Ocean sciences	Ocean
Space sciences	Space
Surface science	Surface
Materials science	Materials
Defence science	Defence
Peace Research	Peace
Leisure Research	Leisure
Environmental sciences	Environment
Ekistics	Human settlement

4 Need for a New Basic Subject

As indicated in the preceding sections, when an idea becomes the focus of study from the viewpoint of specialists in different subject-fields, when the results of their investigations are brought together in a document, and when specialists begin to ask for such a collection by the name of the core idea of study, the need arises to assign the core idea to a single Basic Subject. Further, the treatment of the core idea from different specialists view-points may not remain disjunctive and separate, but there may arise interdisciplinary ideas and subjects, and greater integral relation among the subjects embodied in the document. It may then be inexpedient to classify and place separately the individual subjects from the subject-field of the collection.

It has been found convenient to formulate new Primary Basic Subjects such as "Area Study" and "Generalia Person Study". Particular area study such as Sinology, Indology, and American Studies could form the schedule of Personality Isolates for subjects going with the Primary Basic Subject Area Study. Similarly, in the case of Generalia Person studies, it has been found convenient to deem particular "generalia persons" as Personality Isolates in subjects going with the Primary Basic Subject Generalia Person Study.

In the case of entity or phenomenon study from diverse angles it has been found convenient to formulate a Primary Basic Subject such as "Phenomenon or Entity Study" and deem each such study of a core entity as an array division of the Primary Basic Subject. Thus, a Secondary Basic Subject is formed for

each such entity study with schedule of isolates of its own. For the time being the array division of the Primary Basic Subject is by Subject Device.

5 Differentiation from Other Modes of Formation

51 PRIMARY BASIC SUBJECT WITH SECONDARY BASIC SUBJECT DIVISIONS

Some of the Primary Basic Subjects — such as Mathematics Physics, Engineering, Geology, Fine Arts, Philosophy and Economics — are each fissioned into several Secondary Basic Subjects with specialisation in each one of them. It may appear that such Primary Basic Subjects present similarity to a Cluster of the kind discussed in the preceding sections. However, they are not to be deemed so. For, some of the Secondary Basic Subjects derived by fission of a Primary Basic Subject belong to the same chain, and the others may belong to collateral chains. The original universe of all these chains is the Primary Basic Subject. On the other hand, the individual subjects in a collection forming the Cluster do not belong to the same chain and not even to collateral ones. There may not be any hierarchical filiation among them.

52 DIFFERENTIATION FROM AGGLOMERATE

As in an Agglomerate of Kind I (See Paper M), the Basic Subject for a Cluster comprehends subjects going with different Basic Subjects. But unlike in the case of an Agglomerate, these Basic Subjects may not be enumerated successively in the schedule of Basic Subjects in the scheme for classification concerned. Further, there is a single entity or phenomenon which forms the focus of study in each of the contributions forming a constituent in a Cluster, unlike in the case of an Agglomerate of Kind I.

53 DIFFERENTIATION FROM DISTILLED PRIMARY BASIC SUBJECT

Viewed from another angle, a cluster may appear to have similarities with or is an intermediate stage in the formation of, Distilled Primary Basic Subject (See Paper H). In the examples given in that paper illustrating the formation of Distilled Primary Basic Subjects, it is pointed out that several observations, experiments and experiences with an idea denoting a practice-in-action in subjects going with diverse Basic Subjects can lead to the formulation of normative principles for a new discipline or a field of specialisation. In the case of a Cluster too an idea occurring in subjects going with diverse Basic Subjects, becomes the focus of study in the subjects falling in the Cluster. However it is not certain whether normative principles (or theory) have been formulated for any of the Clusters yet. The presumption

has been that the focus of study will be elaborated in the respective subject-fields where it occurs as an isolate idea. This implies that there may not be any schedule of special isolate for a cluster. Only common isolates may be used with it. However, in the case of clusters, such as Gandhiana, Study of Future, Materials Science, etc, separate schedules of special isolates have been found necessary. It is not unlikely that this will happen in the case of other clusters too. Regarding the formation of a theory for the field, it may be just a question of time—an adequate number of studies in depth on the focus idea of study may lead to such a theory. Therefore, if we extend the concept of Distillation mode of formation of Primary Basic Subject to cover not only the formation of a pure discipline from out of an idea occurring as a practice-in-action in diverse subjects, but any idea whether a practice-in-action or not, then the Clustering mode and Distillation mode have close similarities.

It is, however, noted that

1 In a Distillation mode, the focus idea constituting a practice-in-action itself becomes the Primary Basic Subject idea with its own special schedule of Personality Isolates; On the other hand

2 In a Cluster the idea constituting the focus idea does not by itself become a Primary Basic Subject; but it may be a Personality Isolate in the schedules for or an array division of, a Primary Basic Subject.

6 Arrangement

As explained in the preceding sections, in a Cluster there is a core entity of study and inputs on it come from specialists in subjects going with diverse Primary Basic Subjects. The position of a new Basic Subject for a Cluster in the schedules depends upon whether the input studies on the core entity fall dominantly in the Natural Science alone, or Humanities alone, or Social sciences alone, or in two more of these fields.

61 AREA STUDY

For example, in an Area Study such as Chinese Studies, the input studies may come from subjects in the Natural Sciences (Mathematics, Physics, Chemistry, Biology, Medicine, etc), the Humanities (Fine arts, Literature, Linguistics, Religion, Philosophy etc) and the Social Sciences (Education, Geography, History, Political science, Economics, Sociology, Law, etc). Therefore, an Area Study is placed earlier to all the Primary Basic Subjects—Traditional as well as newly extrapolated ones. In CC it is placed between "a Generalia" and "1 Universe of Subjects". Among the different Area Studies, the preferred sequence is Spatial (Geographical) Contiguity of the areas forming the focus

of study. CC prescribes the Geographical Device in forming particular Area Study isolate in the (P) facet and in constructing a class number for it. This automatically ensures the accommodation in a helpful sequence (Geographical Contiguity) the Area Studies. Here are some examples:

- u Area study
 - (IP1) isolates
 - Note.—To be derived by (GD)*
 - (Illustrative)*
 - u,41 Chinese studies
 - u,42 Japanese studies
 - u,44 Indology
 - u,5 European studies
 - u,52 Italiana
 - u,55 German studies
 - u,7 American studies
 - u,73 US studies.

Here, the component numbers, 4, 41, 42, 44, 5, 52, 55, 7 and 73 are taken from the Schedule of Common Space Isolates, and denote respectively, Asia, China, Japan, India, Europe, Italy, Germany, Americas, and USA.

62 STUDY OF "GENERALIA" PERSON

If it is a study of an individual who has no particular subject of specialisation with which he can be associated, then the nodal point—the person studied—is treated in a manner similar to a particular Area Study—that is, the persons are to form the schedule of Personality Isolates. The Chronological Device is to be used in forming such isolates. The century or decade, as required, of the birth of the person concerned is used in the Chronological Device. This automatically ensures the accommodation in a helpful sequence (Chronological Sequence) studies on "Generalia persons. Here are two examples:

- w "Generalia person
 - (IP1) isolates
 - Note.— To be derived by (CD)*
 - (Illustrative)*
 - w,M6 Gandhi studies
 - w,M9 Vinoba studies

The date of birth of Mahatma Gandhi is 1869 and that of Acharya Vinobha. Bhave is 1895.

As alternative method is to use the Alphabetical Device.

63 ENTITY OR PHENOMENON STUDY

631 *Wide Range of Input*

As mentioned in Sec 313, in the case of an entity or

phenomenon study, the array divisions of the Primary Basic Subject "Entity or Phenomenon study" is obtained by Subject Device. The position of the Primary Basic Subject itself is dependent on the diversity of Basic Subject with which the inputs studies about the core idea may be deemed to go. Here are some examples.

x Study of entity/phenomenon (from the viewpoint of diverse subject fields ranging over the natural sciences and social sciences).
Note.— Division by (SD)
(Illustrative)

x(C1,6) Study of Time
 x(E1,118) Gold (in all its aspects)
 x(W;18=L) Peace research
 x(Y;3195) Leisure research

The use of (SD) automatically ensures the accommodation in a helpful sequence the studies on particular entities or phenomena.

The packeted components
 C1,6 W;18=L
 E1,118 Y;3195

represent respectively, Time (from Physics), Gold (from Chemistry), Peace (from Political science), and Leisure (from Sociology).

632 *Restricted Range of Input*

In the case of entity or phenomenon study, such as Materials science and Surface sciences, the input studies come dominantly from specialists in the natural sciences subjects. Here are some examples:

AX Study of entity/phenomenon (from the viewpoint of diverse disciplines in the natural sciences)
 AXC Surface science
 AXE Materials science.

64 SEQUENCE

641 *Sequence Among the New Primary Basic Subjects*

The sequence among the three varieties of Primary Basic Subjects

Area Study
 Generalia Person Study
 Entity/Phenomenon Study (with inputs from natural sciences and social sciences)

is as mentioned above, more or less conforming to the principle of Later-in-Time. Area studies, such as Orientalia, Indology, were the earliest to emerge; then came "Generalia Person Studies," such as Gandhi studies; and Entity/Phenomenon studies of the particular variety considered here emerged more recently.

642 Sequence Among Entity Study Basic Subjects

In the case of Entity/Phenomenon study variety of Basic Subject mentioned in Sec 632, CC has attempted to enumerate them as they are few in number at present. Here are some examples:

AXC	Surface Science
AXD	Soil Science
AXE	Materials Science
AXF	Hydro Sciences
AXG	Ocean Sciences
AXJ	Atmosphere Sciences
AXK	Space Sciences

The grouping is roughly: Solid associated (AXC, AXD, AXE), liquid associated (AF, AG), gas associated (AJ, AK), conforming to the Principle of Systematic Mnemonics as well as the Principle of Scheduled Mnemonics.

In the group AXC, AXD, AXE the Principle of Scheduled Mnemonics is used for further arrangement.

C represents the Primary Basic Subject "Physics". Surface Phenomenon has been dominantly studied in "Physics."

D represents the Primary Basic Subject "Engineering". Soil mechanics, Soil dynamics, etc, have been dominantly studied in "Engineering."

E represents the Primary Basic Subject "Chemistry," Formation and properties of materials are dominantly studied in "Chemistry."

In the Group AXF, AXG, the Principle of General to Specific is used for further arrangement. "Hydro sciences" is deemed to be more general than "Ocean Sciences."

In the Group AXJ, AXK the Principle of Away-from-Position is used for further arrangement. With man on Earth, the "Atmosphere" layer is nearer to him than the "Space" layer.

7 Use of "Generalia"

Heretofore, in CC, z Generalia has been used as a Partial Comprehension (Agglomerate) as well as if it were a Primary Basic Subject. In the new proposal "Generalia" will be represented by "a" instead of "z". Separate Basic Subject numbers have been assigned for "Area Study" Generalia Person study, and Entity/Phenomenon Study as indicated in the preceding sections. There will be no array division for Generalia.

8 Bibliographical References

- 1 Sec 2 RANGANATHAN (S R). Subject, quasi-subject, and subject-bundle. (Annual seminar, (DRTC). 4; 1966; Paper C).