CHAPTER 1
INTRODUCTION TO THE STUDY

1.1 Introduction

The ever growing specialisation in the fields of human endeavour and the incessant growth of knowledge has led to increasing scope for research in library classification. Therefore, it is in the fitness of things that efforts towards developing a well-organized classification system is continuously carried on. The trends in research in library classification may be succinctly stated as follows:

(a) Knowledge about the structure and development in the universe of subjects;

(b) Development of a dynamic theory of library classification to provide counter techniques to meet the developments in the universe of subjects; and

(c) Design, revision and continuously updating of schemes for library classification.

The trends in classification research in India demonstrates this.

1.2 Analytico-Synthetic Approach

The Indian approach to design, development and use of schemes for library classification has been spearheaded by the insight and incisiveness of the late Dr Shiyali Rama Ratanma Ranganathan. His contributions have been consolidated in the three editions of the Prolegomena (112) and the several editions of colon classification schedules (93). The essence of Ranganathan's
approach to library classification typifies an analytico-synthetic process.
The theory provides models, tools and techniques for the analysis of subjects into their elemental structures and for synthesising these ideas into assemblages in the manner appropriate to the intellectual needs of the users of information. To quote Ranganathan,

"If the scheme for classification is sufficiently equipped with mnemonics of high potency to form foci, facet-formulae with provision for optional facets to express all possible manifestations of the chosen fundamental categories as facets, and phase formulae with distinctive symbols for all possible relations between different subjects, every new specific subject will be born with its own class number in its pocket, as it were. This will enable us to place it in an appropriate place amidst the older subjects so that it will be correctly understood by the Gestalt procedure by the context in the arrangement". (117)

Thus, the dynamic nature of the universe of subjects calls for a scientific approach to the evolution of the theory and practice of library classification. The ideal set for this evolution is again brought home in the following statement of Ranganathan made in 1957:

"I think that an analytico-synthetic classification has a great potentiality as a Transformer Language, and therefore it becomes a fit subject for research and continuous improvement to effect economy in international effort, to promote international understanding and team work, and thus to help in the promotion of international peace. I further believe that the use of machinery for bibliographical
search will demand an ever-increasingly minute break-down of subjects. This, in its turn, will stimulate research into the deeper foundations of truly individualising and expressive analytico-synthetic classification" (117).

This foresight of Ranganathan has led onto a series of continuous research in the field.

1.3 The Critical Factors Affecting the Design and Development of an Analytico-Synthetic Classification

The critical factors that affect the design and practice of an analytico-synthetic classification are two: the universe of subjects and the universe of users of information. In addition, the reasons of sensory capacity and the intellectual habit suggests a linear arrangement of subjects. This relationship is stated by Ranganathan as follows:

"The intellect prefers to enumerate the classes of an array one at a time in succession. This creates a time-sequence, which is one-dimensional. Again the intellect prefers to apply the relevant characteristics of classification one at a time in succession. This also creates a time-sequence, which too is one-dimensional. A great contribution of Descartes to facilitate the study of a space of two or more dimensions was his reduction of such a space of two or more spaces to one dimension. The phenomenal advance in the study of spaces of two or more dimensions made possible by the Cartesian coordinate system is well-known. This indicates our intellectual preference for arrangement in one dimension." (114).
Thus, the manifold and multidirectional structure of universe of subjects and the tendencies of multidirectional approaches of diverse users of information have to be organized into a type of one-to-one relationship in a linear dimension. In order to do this, research in library classification in India tends in the following directions (32):

1. Developments of methods of knowing the overall structure and developments in the universe of subjects (69);

2. Identifying the views of specialists in different fields on the overall growth of knowledge (13, 18, 24, 156);

3. Recognition of the emergence of a new discipline or an idea and the various stages of development it has gone through (4, 30, 39, 57, 104, 141, 147, 148);

4. Recognition of new modes of formation and development of subjects from time to time (4, 30, 57, 105, 147, 148);

5. Assessing the rate of growth of subjects - macro as well as micro - in a particular subject-field, as a base for prediction of events likely to happen in the near future (9, 73, 107); and

6. Identifying the various factors that affect the thinking process of a normal intellect, that is, the ways in which the ideas got processed and structured in the human mind for communication purposes (62, 32).

This thesis aims to study the modes of formation and development of interdisciplinary subjects and the problems in recognition of the manifestations of fundamental categories in these subjects.

1.4 Trends in the Theory of Library Classification
The summarised statement of the current trends in the theory of library classification (40, 55) is as follows:

1. Evolution and development of dynamic theory of library classification based on an explicitly stated hierarchy of normative principles (87, 118);

2. Conducting a priori and pragmatic observations on various aspects of classification harmoniously blending the two approaches at suitable intervals of time (33, 102);

3. Demarcation of the work involved in the design and development of schemes for classification and of classifying as belonging to three planes of work -- idea plane, verbal plane and notational plane (118);

4. Tackling the problems at the seminal level without getting too much involved in the facts presented at the phenomenal level (33, 70, 106);

5. Developing a scale of priority for consideration and solution among different problems that may come up simultaneously (83);

6. Progressively making the work of the classificationists and that of the classifiers more productive and for this purpose:

   61. Progressively minimise the number of situations wherein the incidence of flair and subjectivity of classificationist and classifier occur (33, 58);

   62. Progressively making the design and development work more and more amenable to scientific method (15, 83, 104); this may in turn,

   63. Reducing the strain on the memory of the classificationist, classifier, and even the user with the aid of mnemonics of several kinds (119);
64. Developing canons, postulates and principles for developing a notational system particularly to meet the need for infinite hospitality and assignment of a unique coextensive class numbers (33, 73, 119); and

7. Formulation and use of precise terminology for the discipline (45).

There has been significant progress in many of these aspects; there are also gaps still to be bridged in some aspects. In fact, this appears to be a challenge for cyclic research which is never ending one. It truly depicts the famous Sanskrit dictum "Siddham sadhyaya kalmpe - what is achieved gives props for what is to be achieved".

This thesis has made an attempt at developing principles helpful in the recognition of the fundamental categories in the newly recognized interdisciplinary basic subjects.

1.5 Trends in the Development of Schemes for Classification

The current trends in the development of schemes for library classification is on the side of continual development. The studies reported (33, 92) have shown that there are significant contributions in this area also. This bridges in a sense the gaps that are likely to exist between theory and practice of library classification. The trends in the research in the development of schemes for library classification may be summarized as follows:

1. Progressively conforming the structure of the schedule and the class number to a specifically developed theory of library classification (37, 38, 40, 55, 92).
2. Continuously developing the versatility of the notational system of classification keeping in view the various restrictions imposed by the psychology of memory and the physiology of eye (14, 121);

3. Progressively develop a systematised method and rules for classifying the subjects embodied in documents (130);

4. Progressively proceed towards providing unique class number for every subject in the universe of subjects;

5. Develop a methodology and organization to keep continuous feedback on the use of the classification and its problems; and

6. Decentralise production of schedules of classification at a much faster pace to meet the future growth.

The Colon Classification is to be released in five fascicules. The general schedule consisting of basic subjects and common isolates is part 1. Part 2 is on formal sciences. Part 3 is devoted to Natural Sciences. Part 4 deals with Humanities while the last Part 5 is on Social Sciences (97).

1.6 Incidence of Flair in the Recognition of Manifestation of Fundamental Categories

The postulate of fundamental categories — Personality, Matter, Energy, Space and Time — was done by Ranganathan in 1944 (110). The Colon Classification had already been designed. Two editions (1933; 1938) had been published. The postulate was developed and a statement of it was made after an empirical analysis of about 1,003 sample examples. The analysis led to a generalization and fundamentalisation. The next edition of the
Colon Classification (Ed 3, 1950) was published without incorporating the postulate of fundamental categories. The fourth, fifth and sixth editions (1952; 1957; 1960) incorporated the fundamental categories. But the recognition aids for fundamental categories - were not delineated.

The Classification Research Group members have looked at this problem critically (27). They do not agree to the postulate of fundamental categories although they accept Ranganathan's facet analysis approach to the design of classification schemes. Norman Roberts in his critical analysis of the concept of Personality said, "Unfortunately the distinction between the occasional glimpses of practical reality and the theoretical literature canvassing untenable views remains; on the evidence of current research activity supporting the Colon Classification scheme, the gap between theory and practice will continue to exist" (144). The problem is not in the postulate of fundamental categories. But it is in the formulation of criteria for recognising the manifestation of fundamental categories. The manifestations of the fundamental categories in each specific subject is meshed in a special contextual texture. Ranganathan himself was aware of it. He stated "The crux of the matter in mechanisation of the postulated pattern is in the assignment of each facet of a subject to the appropriate fundamental category, and no general help is available in this important work in the idea plane. Some models alone can be given. The models are in the form of the expressed facet-formulae and the expressed schedules for the isolates in the respective facets. Applying these to actual subjects sufficiently often will develop a sense of feel about the fundamental categories, rounds and levels in any subject. There is nothing unusual or mystical
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in this; it is the way in which all our knowledge and skills are acquired and developed. There is hardly any royal road to it." (116) Thus it is found necessary to crystalise the feel and experience in the recognition of the manifestations of the fundamental categories.

1.7 The Scope of the Thesis

This thesis has made attempts to identify the causal factors for the problems in the recognition of manifestations of fundamental categories.

The specific objectives of the thesis are summarized below:

1. To study the structure and development of interdisciplinary subjects for the purpose of design, development and use of an analytico-synthetic classification scheme.

2. To identify, categorise and quantify the causes for problems in the recognition of the manifestations of the fundamental categories Personality, Matter and Energy, that are incident in specific subjects going with interdisciplinary basic subjects;

3. To analyse and establish the relationship between the causal factors in the recognition of the manifestations of the fundamental categories Personality, Matter, Energy with the different modes of formation of interdisciplinary subjects, namely, Distillation, Fusion, Entity cluster and Problem cluster.

4. To analyse and establish the relationship between the causal factors in the recognition of the manifestations of the fundamental categories Personality, Matter, Energy with the nature of interdisciplinary subjects, namely theoretical subjects, life-oriented subjects, applied natural...
sciences, and applied social sciences.

5. To develop and formulate a set of principles helpful for recognition of manifestations of the fundamental categories, Personality, Matter and Energy in interdisciplinary subjects.

6. To develop a set of common property ideas and common action ideas as a helpful guide for recognition of manifestation of the fundamental categories Matter and Energy in different specific subjects of interdisciplinary nature.

7. To develop a set of qualifiers to act as a typology for recognition of their incidence in the different Personality isolates.

An empirical study of a sample of specific subjects going with one or other of the four different interdisciplinary subjects is made. The empirical principles helpful in the recognition of manifestations of the fundamental categories Personality, Matter and Energy is formulated.

1.8 Organization of the Study

The organisation of this thesis is done in one continuous volume. The textual matter is presented in the main text. The appendices present matter on samples analysed for study and schedules helpful for recognition of the manifestation of the fundamental categories.

Chapter 2 of the thesis presents the developments in the concept of fundamental categories. It highlights the various connotations of the fundamental categories and also presents the postulate of absolute syntax as developed by Ranganathan and his associates.
Chapter 3 presents the factors leading to interdisciplinary subjects, the structure and developments of interdisciplinary subjects, the modes of formation of interdisciplinary subjects and their recognition in the different schemes for classification. It also lists the new interdisciplinary subjects that are enumerated in the new versions of schemes for classification.

Chapter 4 is on the design of experiments, the criteria for choosing the sample interdisciplinary subjects, the choice of the sample specific subjects, the procedure for collecting data, the methodology for the analysis of subjects and the recording of method for problems exhibited in the specific subject.

Chapter 5 presents the data on the structure and development of interdisciplinary subjects in a brief way. Four subjects chosen for study are: General Systems Theory, Sociobiology, Solar Energy Studies, and International Affairs. These subjects are formed in Distillation mode, Fusion mode, Entity-cluster mode, and Problem-cluster mode respectively. They also represent respectively a theoretical subject, a life-oriented subject, an applied natural science and an applied social science. The different stages of their development, and the evolution of the conceptual structure of these four subjects are presented.

Chapter 6 presents the discussion on the problems of recognition of manifestations of Personality, Matter and Energy in the interdisciplinary specific subjects chosen for the study. A categorisation of the variety of problems is also presented. The four classes of problems are presented with explanation and illustration.
Chapter 7 presents data on the incidence of the different types of problems in fundamental categories. Non-parametric Chi-square statistical test is applied to find out the relationship between the problems in the recognition of the fundamental categories P, M, and E and the modes of formation of interdisciplinary subjects. The test was conducted at the significance level 0.05 for nine degrees of freedom. The results indicate that there is a definite relationship between the causes for recognition of the fundamental categories and the modes of formation of subjects. Observations and analysis have been presented in the text of the chapter.

Chapter 8 presents the principles evolved for helpfulness of recognition of the manifestations of the fundamental categories Personality, Matter and Energy in different types of interdisciplinary subjects.

Chapter 9 presents the findings and conclusions of the thesis.

Chapter 10 presents the sample of 360 specific subjects of interdisciplinary nature. The organisation of the sample is done on the basis of the basic subject groupings. The arrangement is according to the name of subject headings and it is arranged alphabetically.

Chapter 11 presents the comprehensive schedule of common property isolates as manifestation of Matter, the comprehensive schedules of common action isolates as the manifestation of the specific subject and a list of typical set of qualifiers to the personality isolates.

Chapter 12 presents a methodology for the design of a scheme for depth classification.

Chapter 13 lists different bibliographical references used in the
development of the subject.

Chapter 14 is on subject and author index to the text of the periodical publications.