CHAPTER E
STRUCTURES OF SUBJECTS

1 INTRODUCTION

The classification of any universe becomes operative only through the recognition of its structures. "No structure, no classification" is a fundamental truth. "Structure" of any existent essentially refers to its "Types" and/or "Parts", and their interrelationships. Obviously therefore, the classification of the universe of subjects always warrants the recognition of their structures.

The term 'Subject', in the context of subject indexing, has been formally defined as follows:

A "Subject" is essentially a piece of non-discursive information or a unit fact; and it is conveyed by an indicative formulation that summarizes in its message what a particular body of information is about.

In relation to the structure of indicative formulation, it has been discussed in detail in Sec D27 that the "Systematization" of an indicative formulation may be recognized in two distinct dimensions: The vertical dimension, and the horizontal dimension. That dis-
cussion is directly indicative of how structures of subjects are recognized. It is possible to get a still deeper view of how structures of subjects are recognized. Here is an attempt towards that direction.

2 SEMANTIC STRUCTURE OF A SUBJECT

"Mathematics" is a recognized subject. A question may be raised: "What is mathematics as a subject?" One of the acceptable answers to this question may take the following form:

"Mathematics as a subject comprehends arithmetic, algebra, analysis, group theory, trigonometry, geometry, topology, mathematical logic, etc."

This answer may be regarded as one of the possible enumerative definitions of mathematics. In this definition, "Mathematics" has been deemed to be a "whole subject"; and it has been defined in terms of the "non-whole subjects" comprehended by it.

From this point-of-view, each subject is recognized to be a vertically systematized body of information that summarizes indicatively all its "non-wholes".

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A "non-whole" may be relatively a "Type" or a "Part". It is evident, therefore, that the structure of a subject deemed to be a whole can be recognized in the dimension of its non-wholes. At bottom, their recognition is based on the denotation of the subject concerned.

Like "Mathematics", "Cancer" is a recognized subject. In the idea plane, it is a generic subject comprehending "Carcinoma", and "Sarcoma", and also their respective types. Therefore, in the dimension of its denotation, "Cancer" is a systematized body of ideas made up of types "Carcinoma", and "Sarcoma".

The structure of a subject in the idea plane, and in the dimension of its denotation (comprehension) is its "Semantic Structure". The semantic structure of a subject is intrinsic to it.

3 SIMPLE, COMPOUND AND COMPLEX SUBJECTS

Let us consider the subject-proposition (name-of-subject) "Inorganic Chemistry". Let us assume that it warrants analysis into "Chemistry", and "Inorganic Substances", for the purpose in hand; for, "Inorganic Substances" as a constituent of the name-of-subject has reduced the extension of "Chemistry" to give rise to

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the type subject "Inorganic Chemistry". In this case, therefore, "Chemistry, and "Inorganic Substances" are the two constituent elements of the subject-proposition "Inorganic Chemistry".

At the level of the name-of-subject, "Mathematics" does not admit of being analyzed into constituent elements; for, it consists of a single verbal element. Similarly, the term "Cancer" does not admit of such analysis. Again, we may assume that for the particular purpose in hand, it is not necessary to analyze "Inorganic Chemistry" into its verbal elements. There are names-of-subject which do not admit of being analyzed into verbal elements, or which need not be analyzed into verbal elements for the purpose in hand; and such names-of-subject are called "Simple Names-of-Subject" - in short, "Simple Subjects". On the other hand, there are names-of-subject which warrant to be analyzed into their verbal elements for the purpose in hand; and such names-of-subject are called "Compound Names-of-Subject" - in short, "Compound Subjects". Obviously therefore, there cannot be any absolute definitions of "Simple Subject", and "Compound Subject"; and their definitions can only be relative to the purpose in hand. Of course, in the majority of cases, names of compound subjects do not admit of being argued to be treated as "Simple Subjects" for any purpose in hand.
The structure of a simple subject can be recognized normally only in the dimension of its denotation. In other words, normally, only the semantic structure of a simple subject is recognizable. But the structure of a compound subject can be recognized in the dimension of its denotation (semantic structure), as well as in the dimension of its elements and of their sequence.

It may be noted here that when two subjects - simple or compound - combine with each other on the basis of some relationships, the resulting subject is a "Complex Subject". For example, "Mathematics for Engineers", "X-ray Crystallography", "Influence of Buddhism on Christianity", etc. Obviously, the structure of a complex subject may be recognized in the dimension of its denotation (semantic structure), as well as in the dimension of its major components, and of their sequence. Each major component as a simple or compound subject, in turn, has its own structures.

4 ELEMENTARY STRUCTURE OF A SUBJECT

Let us consider the following subject-proposition:

"In medicine, treatment of infections diseases of the respiratory system of children".

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This is an obvious case of a name-of-subject, which for the purpose of subject indexing would always warrant analysis into its elements; therefore it is a compound subject. As a subject, it is a vertically systematized body of ideas comprehending and summarizing indicatively all the different "kinds of treatment" of the "specific diseases" of all the "organs" of the respiratory system of "all who fall in the age-group denoted by the term 'children'". Each of these subjects can be deemed to be a "non-whole subject" in relation to the "whole subject" represented by the subject proposition. From this point-of-view, what all "non-wholes" are comprehended by the "whole" may be recognized as the semantic structure of this compound subject.

The designing of a standard pattern of grouping cannot be achieved only on the basis of the semantic structures of compound subjects. The purpose calls for the recognition of a structure in the dimension of their constituent elements. For example, in the subject-proposition cited above, the following are the substantive constituent elements:

Infections diseases. Treatment.

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Further, on the basis of the semantic significance of the substantive constituent elements, they may be categorized into a few "concept types". For example, "Medicine" may be said to be a "Discipline" denoting concept; "Children" representing, in this context, the "physical bodies of children" may be said to be a "Whole Entity" denoting concept; "Respiratory system" may be said to be a "Part Entity" denoting concept; "Infections diseases" may be said to be a "Property" denoting concept; and "Treatment" can be said to be an "Action" denoting concept. The categorization scheme need not necessarily be in all situations what is suggested here. The concept-types or categories are recognized on the basis of the semantic significance of the substantive constituent elements, but there cannot be any rigidity about what categories are recognized and about how many of them are recognized. The structure of a subject in the verbal plane, and in the dimension of its constituent elements in terms of categories developed by abstraction from their respective semantic significance is its "Elementary Structure". It may be noted that the categorization of elements is again a process of classification, and it is based on semantic contents of elements. The recognition of the elementary structure is again purpose-oriented; and they are always postulated. But still, it is possible to recognize
a highly generalized elementary structure of subject propositions. Such a structure can be manipulated for the purpose of all kinds of classification. Such a highly generalized elementary structure also is a postulated one. A postulate may be taken to be a proposition or other formulation which is accepted without evidence, because it belongs to a coherent set of such propositions from which it is possible to derive other propositions which are deemed to be convenient to accept for their helpfulness to the purpose in hand (28). Nevertheless, depending upon the purpose in hand, the elementary structure of names of subjects may be repostulated. The postulates, at this level, are primarily concerned with the recognition of purpose-oriented "Categories", and "Sub-categories" to which the different substantive constituent elements belong. Even for one and the same purpose, different sets of postulates may prove more or less equally helpful; this is especially evident in the design of different SILs. Postulation is an artificial measure. Its value lies in its helpfulness to the purpose in hand. The epithets "True" or "False" do not apply to the postulates relating to the structures of subjects. They are considered only in terms of their helpfulness to the
purpose in hand. If they are found unhelpful, they are replaced by a helpful set. It may be noted here that in the context of a postulated elementary structure, the simple subjects also fall in a distinct category.

5 SYNTACTIC STRUCTURE OF A SUBJECT

The designing of a standard pattern of grouping (organizing classification) cannot be achieved only on the basis of the semantic, and elementary structures of compound and complex subjects. The purpose calls for the recognition of another structure in the dimension of the sequence of the substantive constituent elements of subject propositions. This sequence is meant to preserve the appropriate meaning of the subject proposition by establishing appropriate relationships between or among the elements. Again, for the purpose of organizing classification, the consistent indication of these relationships is essential. One means of indicating these relationships is to postulate the sequence of the elementary categories. The postulation of symbols to represent the different categories is another additional means. For example, according to a set of such postulates the substantive constituent elements of the subject-proposition mentioned in Section 4 may be presented as follows:
The structure of a subject (compound or complex) in the verbal plane, and in the dimension of the sequence of the categories of elements or of the components, as the case may be is its "Syntactic Structure". Depending upon the purpose in hand, the syntactic structure of subject-propositions are postulated.