Concept of 'subject' in the context of library and information science from a new angle

Bidyarthi Dutta[a] and Chaitali Dutta[b]

[a]Assistant Professor, Department of Library & Information Science,Vidyasagar University, Midnapore, West Bengal
E-mail: bidyarthi.bhaswati@gmail.com
[b]Associate Professor, Department of Library & Information Science,Jadavpur University, Kolkata

E-mail: contactcdhere@yahoo.com

The concept of subject as expounded in library and information science (LIS) has been interpreted here from the standpoint of the concept of word in linguistics. Both the concepts have been thoroughly reviewed. It has been observed that the concept of subject so long conceived by different researchers in LIS is basically preceded by the concept of document. The description of subject, therefore in most cases, by default becomes incumbent within the concept of document. Since the document is a macroscopic entity, therefore document-dependent description of subject naturally portrays a macroscopic layout of the same. This paper attempts to develop a document-independent description of subject, which is based on semantically-related words within the domain of appropriate context. According to this new description, the subject would eventually become definable as sets of well-defined and semantically-related words that may be regarded as microscopic description. It has also been found out that the seed of document-independent and word-based definition of subject was already sown in the concept of semantic field, a domain under the subject linguistics. This concept was incepted by Trier and subsequently modified by Lehrer. It has been logically established that the idea of foci incepted by Ranganathan and the idea of semantic field incepted and modified by Trier and Lehrer respectively are conceptually equivalent. *A subject* may therefore be described as sets of semantic fields and, in turn as sets of words.

Keywords: Linguistic interpretation of subject, Semantic field, Semantics, Foci, Facet, Macroscopic subject, Microscopic subject, Linguistics, Universe of subjects

Library science and information science: an introduction

Library science is an interdisciplinary or multidisciplinary area of study that deals with collection, processing, organization, preservation, and dissemination of different types of information resources in various kinds of libraries and the enabling of optimum utilization of information by information clientele. Various practical perspectives of different types of academic and research activities come under the purview of this area of study. Traditional libraries usually functioned with mere paper-based, printed materials as information resources, whereas modern concept of libraries embrace wide spectrum of electronic, non-print materials also within the scope of library systems and services. It is interesting to note that though library is more than two thousand years old institution since Alexandrian era, but the concept of librarianship or library science is very recent. Actually the emergence of library science as an independent stream of study or separate subject is approximately contemporary to the First World War. Thus library is old but library science is new, and library science education is newer. In India, LIS education was started by Borden and Dickinson with the encouragement of Maharaja Swaji Rao of Baroda in 1911, i.e. little more than one hundred years back. The first American school for library science was founded by Melvil Dewey at Columbia University in 1887 and the first textbook on library science was published in the year 1808[1]. The school of thought of library science in India was initiated by the scholar of mathematics, Dr. S.R. Ranganathan, who is known as the Father of library science in India.

Information science, according to Borko[2], "is that discipline that investigates the properties and behavior of information, the forces governing the flow of information, and the means of processing information for optimum accessibility and usability. It is concerned with that body of knowledge relating to the origination, collection, organization, storage, retrieval, interpretation, transmission, transformation, and utilization of information. It has both a pure science

component, which inquires into the subject without regard to its application, and an applied science component, which develops services and products".

There are various aspects of information science in the context of different disciplines. The cognitive viewpoint of information science was explained by Belkin[3] and Brookes[4]. A logical interpretation of cognitive viewpoint was given by Brookes' fundamental equation. He envisaged information science by analogy with the physical sciences. According to Saunders[5], though the subject domain of information science had originated with scientific information, but its methods are equally applicable to other subject areas also. Farradane[6] argued that a "true information science' should be a science in its own right, an 'academic and applied study' and 'not an applied multidisciplinary art'; this would require an application of rigorous scientific method, and a careful re-examination of basic concepts". He developed this view of information science modeled on the physical sciences. Meadows[7] considered three separate groups to describe the scope of the information science domain, i.e. information science practitioners; information system designers; and information scientists. He described the subject from application-oriented point of view rather an independent discipline. The existence of information science as an independent discipline was emphasized by Brookes and Farradane, whereas the same just as a support system to other major science disciplines was argued by Meadows. Thus, Meadows' view contrasted Brookes' and Farradane's views. According to Webber[8], "the sapling which Farradane and Brookes had such hopes for in 1980 has, unnoticed by many, shot up, but become tangled in the undergrowth of more robust disciplines and is now weakened, perhaps beyond saving". In the context of Meadow's view, Bawden[9] pointed out, "There is not really much of a science of information today', Meadow wrote, 'but this, I believe, will change significantly by 2001'. However, his vision of this future information science was that of an 'integrating science', since information is of concern to many other disciplines: he named computer science, mathematics, economics, psychology, electrical engineering, communication theory, linguistics, sociology, and others. The distinction is not in content, but in outlook: information science will focus on human behaviour, of both groups and individuals, in interacting with information and the systems which deliver it. Therefore: information science [...] may never evolve into a body of knowledge and methodology distinguishable from other sciences [... it] will be concerned with the integration of the contributions of other sciences, much as ecologists are today [... there is] evidence that information science will remain only an integrating science, never a basic one". There are so many interpretations of subject approach to information science. It is also a still unsolved problem that whether information science is a self-sufficient discipline or based on science of information collected and collated from different other disciplines.

Library and information science: blending of two disciplines

The two subjects, library science and information science both originally evolved in due course of integration of the contributions from other disciplines, including science, social science, humanities and arts. The major scope of library science was processing and organization of documents in libraries, whereas the same for information science includes the collection and processing of consolidated information from different subject areas. The focal point for library science is thus library and its document collection, whereas the same for information science is any broad discipline and concerned subject domain in consequence. Now, any document collection should be segregated, otherwise retrieval is impossible and the segregation process is executed on the basis of subject. The document classification on the basis of subject is thus an inseparable function of any library. The entity subject is thus the core area of study of both library science and information science as well. Now, it is hardly possible to trace out a distinguished instant at which these two separate streams viz. library science and information science were riveted together and introduced as library and information science, but it can be safely stated that the concept of subject and its classification is an imperative core area of study of both library science, information science and at the same time library and information science also.

Subject: some basic concepts

There are so many meanings of the word 'subject' in different contexts. The synonyms or near synonyms generally used for the word "Subject" in different literature are, among many others, "aboutness", "content", "theme" and "topic". It is also controversial

which words are synonym or near synonyms. The subject of a document is often evident in a way that even makes it difficult to rise as a problem or to define. Ranganathan[10] declared "subject" as an "assumed term". The meaning of "subject" is important in indexing and classification of documents and in information retrieval. If subject descriptions of the same document differ or if different kinds of retrieval systems selects different sets of documents, then what should be the crux of subject analysis of documents? At this point it may be raised as a very fundamental query, that what is the subject of a document?

From an epistemological point of view the important question is: Is the subject of a document something subjective or objective? Is it something inherent in the documents or something that the indexer or abstractor produces from an interpretation of the document? What is the ontological nature of subjects? In both cases an understanding is needed of how subjects should be determined in order to produce fruitful subject analysis and document representations. A deeper understanding of this issue is extremely important for all theories and practices of knowledge organization as well as for information retrieval.

Hjørland[11] demonstrated that implications of different kinds of indexing and classification systems (manual as well as automatic) are based on quite different understanding of the ontological nature of subjects. Systems such as facet analysis, bibliometric coupling, vector space models, user based indexing etc. are based on different implicit notions of "the subject of a document". Such systems can only be compared if the concept of subject has been properly defined. Contributors to the theory of subject analysis include Cutter[12], Drake[13], Wilson[14], Hutchins[15,16,17], Maron[18], Miksa[19], Soergel[20], Hjørland[21,22,23] and Molina[24].

Cutter[12] opined that the stability of subjects depends on a social process in which their meaning is stabilized in a name or a designation. His thought interpreted subjects as some intellections, which receive a name that itself represents a distinct consensus in usage. In Cutter's view, subjects are by their very nature indicate locations in a classificatory structure of publicly accumulated knowledge. It is clear that Cutter emphasized subject descriptor or subject heading rather than an axiomatic concept of subject. Drake[13] also emphasized subject descriptors and accepted the concept of subject as organized knowledge corpus evolved in course of social changes.

The concept of subject in Library and Information Science was given by Patrick Wilson[14]. He examined by thought experiment the suitability of different methods of examining the subject of a document. The methods described are:

1. To identify the author's purpose for writing the document
2. To assign weightage to the relative dominance and subordination of different elements in the picture, which the reading imposes on the reader.
3. To group or count the documents used of concepts and references
4. To deduce a set of rules for selecting the elements which are necessary as opposed to unnecessary for the work as a whole

Patrick Wilson concluded that each of these methods is insufficient to determine the subject of a document and remarked: "The notion of the subject of a writing is indeterminate". He also said that authors of documents often use terms in ambiguous ways. Even if the librarian could personally develop a very precise understanding of a concept, he would be unable to use it in his classification, because none of the documents use the term in the same precise way. Based on this argumentation Wilson made conclusion: "If people write on what are for them ill-defined phenomena, a correct description of their subjects must reflect the ill-definedness".

The view proposed by Hjørland[22] emphasizes that subject analysis is always done from a given perspective and purpose. The goal of subject analysis is to support some activities of users, which are defined by the explicit or implicit purpose of the information service that undertake the subject analysis. Thus two different types of library and information services, say a physical science database and a public library need different kinds of documents and different kinds of descriptions and subject analysis.

A number of researchers in library and information science have tried to escape the difficulties as to the concept of subject by preferring to use the concept "aboutness" as an alternative. A justification for this decision was given by Hutchins[15]:

"From this account of indexing one thing should now be clear, namely, that the notion of the "subject" of a document is peculiarly vague. We may mean the "extensional   aboutness"   or   the   "Intentional

aboutness", as given by the author in his title or as given by the abstractor or by the indexer; we may mean the NL [natural language; BH] phrase expressing the Topic or we may mean the DL [documentary language; BH] expression denoting the document content. There are clearly so many variables involved that whenever we talk of the "subject" of a document we ought always to say what kind of subject we are intending.

> As we have seen, judgments of subject content (by authors, readers and indexers) are influenced by so many factors that any particular statement of a document's content should never be regarded as anything other than just one of many possible such statements. In other contexts and from other perspectives the same document may have other, quite different 'subjects'."

Maron[18] discussed the concept of aboutness and interpreted the same in terms of search behavior. He showed that aboutness is not the central concept in a theory of document retrieval. He mentioned, "A document retrieval system ought to provide a ranked output (in response to a search query) not according to the degree that they are about the topic sought by the inquiring patron, but rather according to the probability that they will satisfy that person's information need". He related the concept of aboutness with the probability of user's satisfaction.

Miksa[19] sketched an integrated outline of subject headings used in dictionary catalogue since Cutter's time to his contemporary period. It is clear from Miksa's overview on historical account of evolutionary stages of subject-heading concept that in LIS, researchers mostly concentrated on subject terms or descriptors for the purpose of subject indexing and cataloguing. Therefore the phrases like subject-descriptor or subject-term or index-term etc. are frequent casual misnomers in LIS for the word subject. An axiomatic development of intrinsic concept of subject has been so long observed within the purview of epistemology and cognitive psychology. Cutter discussed with subject descriptors or subject index terms only, but no axiomatic concept of subject was presented.

Soergel[20] emphasized on information organization through appropriate choice of subject descriptor terms. His emphasis was also chiefly on subject headings. Molina[24] discussed with content analysis, which is restricted within the limits of written textual documents. He concerned 'text', as an inseparable part of semiotic research, and 'content', as the informative power of text. In his view, the content analysis should be executed in an inter-subjective manner with regard to the context, the analyst's knowledge base and the documentary objectives. He put forward the idea of subject on the basis of context-based content analysis.

The concept of aboutness is thus introduced in order to solve the problem relating to the concept of "subject". The term "Aboutness" was coined by R.A. Fairthorne[37] in 1969. This term was coined in the context of philosophy, but it became popular in the field of library and information science since early seventies. Hutchin's interpretation of subject much popularized this term as it removed some epistemological problems from interpretative arguments of subject. Hjørland[11, 21] found that any practice of subject determination as well as any theory of subject analysis is necessarily based of epistemological views. Those views are, however, seldom explicit, and often unknown because of lack of epistemological knowledge in Library and Information Science. Each approach to subject analysis and information retrieval is more or less based on specific epistemological assumptions. Facet analysis, IR-approaches, user-oriented approaches, bibliometric approaches etc. are basically related to different epistemological views which implies different conceptions of what subjects are. Based on this analysis, Hjørland[11] developed a new understanding of subjects as "informative potentials" (first formulated as "epistemological potentials"), i.e. the subjects of a document are its informative potentials. The basic idea is simple to explain. Rather than seeking the subject of a document, for example, in some inherent objectives and facts about that document, the indexer should ask: "What is this document useful for"? In other words, the subject assignment is seen as a human act, which aims at supporting some activities of the users. The subject determination that is most successful in accomplishing this goal is the most correct one. Consequently subject determinations are situational and context-dependent. The subject of a document is also theory-dependent. Just as one could not describe the potentials of uranium as an energy source before the development of physical theories of radioactivity, the potentials of documents are changing when theories change. This is best

understood by considering the citation patterns and reception history of documents. Although uranium could not be described as an energy source before the development of theories on radioactivity, uranium nonetheless contained the potentials all the time. The same is the case with documents. Their potentials may be unrecognized for a long time, but nevertheless they exist.

Metcalfe[25] provided an overview of the history of the concept in libraries for almost hundred years. Metcalfe concluded, the subject of a document often seems so obvious, that it is hard to imagine alternatives or to understand that deep theoretical problems should be or could be involved. However, the notable feature is that different persons may have good reasons to ascribe different subjects to the same document that it is illusory to speak of the one true subject of a document disregarding the situation and the purpose of the describing activity. It is thus better to say anything whatsoever may be ascribed a subject by somebody for some purpose. If considered this way then the subject is something that is ascribed to documents or to other objects, but not something with an independent existence beyond this ascribing activity. But then what is it that is being ascribed? And that obvious question still remains, "What is a subject?"

Bernd Frohmann[26] added:
"The stability of the public realm in turn relies upon natural and objective mental structures which, with proper education, govern a natural progression from particular to general concepts. Since for Cutter, mind, society, and SKO [Systems of Knowledge Organization] stand one behind the other, each supporting each, all manifesting the same structure, his discursive construction of subjects invites connections with discourses of mind, education, and society. The DDC [Dewey Decimal Classification], by contrast, severs those connections. Dewey emphasized more than once that his system maps no structure beyond its own; there is neither a "transcendental deduction" of its categories nor any reference to Cutter's objective structure of social consensus. It is content-free. Dewey disdained any philosophical excogitation of the meaning of his class symbols, leaving the job of finding verbal equivalents to others. His innovation and the essence of the system lay in the notation. The DDC is a poorly semiotic system of expanding nests of ten digits, lacking any reference beyond itself. In it, a subject is wholly constituted in terms of its position in the system. The essential characteristic of a subject is a class symbol which refers only to other symbols. Its verbal equivalent is accidental, a merely pragmatic characteristic... The conflict of interpretations over "subjects" became explicit in the battles between "bibliography" (an approach to subjects having much in common with Cutter's) and Dewey's "close classification". William Fletcher spoke for the scholarly bibliographer.... Fletcher's "subjects", like Cutter's, referred to the categories of a fantasized, stable social order, whereas Dewey's subjects were elements of a semiological system of standardized, techno-bureaucratic administrative software for the library in its corporate, rather than high culture, incarnation".

Frohmann's interpretation implies DDC scheme more as an empirical approach to subject classification rather having any concrete theoretical background. A system, which has an explicit theoretical foundation, is Ranganathan's Colon Classification. As far as known Ranganathan is the only researcher who have earlier given an explicit definition of the concept of "subject"[27]:

"Subject - an organized or systematized body of ideas, whose extension and intension are likely to fall coherently within the field of interest and comfortably within the intellectual competence and the field of inevitable specialization of a normal person".

Another definition was given by Gopinath[28]:
"A subject is an organized and systematized body of ideas. It may consist of one idea or a combination of several...".

Ranganathan's definition of "subject" is based on Colon Classification system. The Colon classification is an analytico-synthetic scheme, which is based on the combination of single elements from facets to subject designation. The term "Facet" implies another entity, which was also defined by Ranganathan in this connection. He defined "Facet" as the component of subject. The exact definition was, "Facet is a generic term used to denote any component- be it a basic subject or an isolate- of a compound subject, and also its respective ranked forms, terms and numbers"[28]. Apart from basic facet and isolate facet, Ranganathan exemplified so many other facets like, geographical facet, language facet, wave length facet, commodity facet, substance facet, organ facet,

cultivar facet and so on. This aspect of Ranganathan's theory was discussed by Metcalfe[25] also. In psychology and philosophy, the concept "subject" has been used in older literature, but it is almost absent in recent literature. "Subject" has, for example, been used in the sense of "intentional object" in phenomenology. The concept is also used in linguistics. A subject (as noun) can thus only be expressed using familiar nouns or general terms, not indefinite specific terms. Some information is turned to subjects; other information is placed in focus. The subject of a sentence is not identical with the content of that sentence. For instance, the sentence: "The colour of Indian flag is saffron, white and green" has subjects, for example, the Indian flag, colors and the colours of Indian flag. Its content is, however, that Indian flag's colours are saffron, white and green. The subject is thus a categorical determination of content.

Wilson's concept of subject was discussed by Hjørland[11] who found that it is problematic to give up the precise understanding of such a basic term in Library and Information Science. Wilson's arguments led him to an agnostic position which Hjørland found unacceptable and unnecessary. Concerning the authors' use of ambiguous terms, the role of the subject analysis is to determine which documents would be useful for users to identify whether or not the documents use one or another term or whether a given term in a document is used to express one or another meaning. Clear and relevant concepts and distinctions in classification systems and controlled vocabularies may be fruitful even if they are applied to documents with ambiguous terminology.

Stam[29] is critical about subjects as basis for groupings of knowledge. However, he was concerned with that aspect of subject matter, which is usually called topic or topicality. He stated that subject matter is the weakest criterion for generic groupings because it fails to take into account how the subject is treated. The subject matter of documents is usually described by terms related to method and genre involved in the topic and those terms are regarded as the subject description of a document. The ambiguities in the concept of subject along with different logical aspects were discussed by Hjørland & Nicolaisen[30] from the viewpoint of Bradford's phenomenon of scattering.

Different scientists describe the concept of subjects from different views. No single description leaves any complete picture of the concept of subject, but an overall study of all theoretical formalism draws a comprehensive layout of the criteria. The notable feature is that, in all theories so long discussed the concept of "subject" is based on the epistemological formalism. Here the term 'subject' has been conceived as a built-in conceptual entity of a document. An attempt to develop document-independent conception of subject is highly relevant particularly at this time of frequent proliferation of concepts that results in regular burgeoning of inter- and multi-disciplinary subjects. On listening the word 'subject' normally people throw questions like that, what is the subject of a document, or an article, or a research paper, or a communication, or a topic discussed, or a movie, or a seminar, or a lecture etc. etc. That is to say the concept of subject is imbibed in the concept of document or research paper, or lecture, whatever it may be. The subjects may be considered in these regards as the conceptual entity associated with any document or human communication in any form whatsoever. But an essential question may then arise, what is the axiomatic concept of subject? How to define the concept of subject without any backing of the concepts of document and human communication in any form? Basically the interaction between human cognition and nature is the father of knowledge, wherefrom subjects were created. The origin, growth and structural aspects of knowledge are elaborately discussed in epistemology. The concepts of subjects are thus long prior to the inception of documents. Therefore the concept of subject should be independently developed irrespective of the concept of document. This attempt was first made by S.R.Ranganathan[28]. He coined the phrase 'universe of subjects' and defined various modes of formation of subjects. Later on, M.A. Gopinath and S. Seetharama modified Ranganathan's concepts. Recently B.K. Sen[31] also added some new modes of subject formation. The word 'subject', in the context of library and information science mostly indicates 'subject descriptor' or 'subject heading'. Because the prime objective of library and information professionals is cataloguing and subject indexing. The major function of library and information theorists thus focuses on development of various subject access tools like classification schedules or list of subject headings. The main objectives of

subject access tools are to describe the content of documents and all other forms of human communication in terms of some indexing language, which is by and large an artificial language. The development of an axiomatic concept of subject therefore comes under the purview of epistemology in the study of growth and structural aspects of knowledge. The document-independent conception of subject may be originated from the study of growth and evolution of knowledge.

The existing theories so long discussed have viewed subjects from macroscopic point of view, i.e. just like a continuum. The subject has been looked upon as either epistemological potential, or aboutness or contextual proximity etc. These views treat a subject as a whole just like an undivided entity, or continuum. These are integrated views of interpretation of subjects. In fact, the concept of 'knowledge' has been developed in epistemology from an integrated approach, which is a macroscopic point of view. Therefore the epistemological interpretation of subject is obviously a macroscopic elucidation. As observed through literature review, the subject is generally interpreted from the point of view of epistemology. Now, the subject is derived from knowledge. The segmentization of integrated corpus of knowledge gradually results in formation of subjects. If a subject is further analysed, some facets would be got. The method of analysis of subject-content as invented by Ranganathan resulted in some canonical divisions at first level and then into some foci at second level for some subjects only. For all other subjects Ranganathan's analysis directly resulted number of foci. Several specific domains or foci as termed by Ranganathan eventually end in sets of contextually presupposed terms or words. The words are thus ultimate result of subject analysis. Just at this context, a subject may thus be viewed as a collection of well-defined sets of contextually presupposed terms or words. The study of words in general comes under the purview of linguistics. Therefore this interpretation of subject as a collection of well-defined sets of contextually presupposed terms or words may be regarded as linguistic interpretation of subject. As knowledge is super-ordinate to subject and is regarded as an integrated corpus or continuum, therefore interpretation of subject from knowledge or epistemological point of view may be regarded as macroscopic one. Whereas, words are subordinate to subject and are discrete, piecemeal entities. The interpretation of subject from words or linguistic point of view may thus be regarded as microscopic one.

Subject: linguistic interpretation

According to Palmer[7], "Dictionaries appear to be concerned with the stating the meaning of words and it is, therefore, reasonable to assume that the word is one of the basic units of semantics." Semantics is a term that refers to the study of meaning. Palmer opined that, "Since meaning is a part of language, semantics is a part of linguistics." The words are not independent entities, but they are mutually inter-related among themselves through meaning. Therefore meaning is a core entity in linguistics. The degrees of closeness or proximity in relationships among words vary for different sets of words. The relational aspects among words may be classed in three types[32], i.e. (1) synonymy (2) homonymous and (3) meaning inclusion. The sets of words possessing any of these three relational aspects among themselves flock together to form groups. Lehrer[33] described such groups as semantic field. It is interesting to note that the seed of the concept of semantic field was sown in lexical field theory, which is regarded as the origin of the field theory of semantics that was introduced by Jost Trier, the German linguist, in 1934[34]. Trier conceived the idea that words acquired their meaning through their relationships to other words within the same word-field. An extension of the sense or scope of meaning of one word narrows the meaning of other peripheral or neighbouring words. Groups of words in the lexicon can be semantically related by being members of a set known as a semantic field, which is the view of Lehrer. He defined semantic field as: "a set of lexemes which cover a certain conceptual domain and which bear certain specifiable relations to one another". Brinton[1] defines semantic field or semantic domain as follows: "Related to the concept of hyponymy, but more loosely defined, is the notion of a semantic field or domain. A semantic field denotes a segment of reality symbolized by a set of related words. The words in a semantic field share a common semantic property."

According to Hintikka[35], "A meaning of a word is dependent partly on its relation to other words in the same conceptual area". It is to be noted that the words existing within the domain of a particular semantic field are not synonymous, but they all

express some common phenomena. Akmajian[32] et al restated Lehrer's view as follows:

"On a very general and intuitive level, we can say that the words in a semantic field, though not synonymous, are all used to talk about the same general phenomenon, and there is a meaning inclusion relation between the items in the field and the field category itself. Classical examples of semantic fields include colour terms (red, green, blue, yellow), kinship terms (mother, father, sister, brother), and cooking terms (boil, fry, bake, broil, steam). The notion of a semantic field can be extended intuitively to any set of terms with a close relation in meaning, all of which can be subsumed under the same general label. Thus, in addition to the specific semantic fields cited, we could refer to labels such as "nautical terms", "plant names", "animal names", "automobile terms", and so on, as specifying semantic fields".

The semantic field may thus be conceived as clusters or groups of words maintaining some relationship among themselves on the basis of which their meaning may be ascertained. The definition of *subject* given by Ranganathan and Gopinath describes it as an organized and systematized body of ideas. Semantic field is thus set of words and subject is thus set of ideas.

Let us now compare Akmajian's and Ranganathan's views. Akmajian described "nautical terms", "plant names", "animal names", "automobile terms" etc. as semantic fields, whereas Ranganathan described "geographical facet", "organ facet", "substance facet", "cultivar facet", "commodity facet" etc. as different facets. The semantic field "automobile terms" contains only some terms related with automobile manufacturing and industry, or "animal names" contains names of a number of animals; while "substance facet" contains names of different groups of substances, (i.e. organic substance, inorganic substance etc. in chemistry) or "cultivar facet" contains names of groups of plants on the basis of selected characteristics (i.e. clone, seed-produced, genetically-modified etc.). The notable feature is that the facets also consist of some groups or clusters, which contain collection of well-defined discrete entities that are clustered on the basis of characteristics. The facets directly do not contain discrete entities. The "substance facet" consists of different groups like "organic substance", "inorganic substance" etc. The group "organic substance" consists of names of actual substances,

i.e. Methane, Ethane, Ethylene etc. Such groups indicating specific domains within a facet was termed as focus (singular) or foci (plural) by Ranganathan. Therefore it is logically quiet feasible to reckon Akmajian's description of semantic field and Ranganathan's description of foci as equivalent concepts. If foci can belong to any facets and the facets can be conceived as components of subject, then semantic field may also be deduced as component of subject.

Ranganathan distributed the foci of any subject over five fundamental categories, viz. personality, matter, energy, space and time. He divided some basic subjects at the first level into some canonical divisions in Colon Classification scheme, sixth ed. For instance, the subjects like mathematics, physics, geology, useful arts, fine arts and philosophy were subdivided into some canonical divisions. Those canonical divisions were further subdivided into number of foci as mentioned above. The other subjects were directly divided into some foci and they were distributed over five fundamental categories through stipulated facet formula assigned to each subject. For the above-mentioned six subjects the canonical divisions may be considered as component of subjects, and foci may be considered as component of canonical divisions. For other subjects foci may be considered as components of subjects. Foci were the smallest and eventual denomination of subject in Ranganathan's classification scheme. A glimpse on different foci for different subjects in Colon Classification Scheme, sixth ed. (for instance, in the canonical division sound under the subject physics some foci are, audible sound, infra sound, ultra sound etc; in biology some foci are, nucleus, gene etc; in sociology the examples are, rural people, urban people etc.) instantly tunes harmony between the two concepts, i.e. foci and semantic field. A semantic field contains semantically related sets of words, and foci also contain sets of contextually-related, hyponymous or synonymous subject terms. The foci may thus be analogized with the semantic field on a firm logical ground.

It is obvious that a subject may be thought as sets of foci from the viewpoint of division of content, or combinations of facets from the viewpoint of division in five fundamental categories. Also the foci may be reckoned as equivalent to semantic field and it is therefore logically feasible to accept a subject as sets of semantically related words in turn or sets of semantic fields.
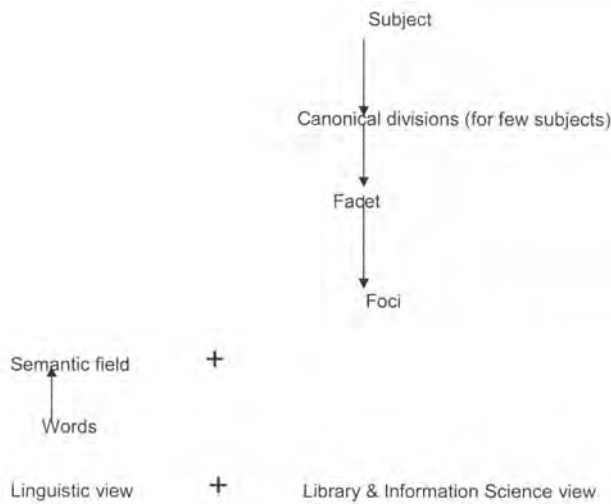
Fig. 1— Linguistic view of words and LIS

Fig. 2—Linguistic view of LIS phenomenon

If Akmajian's statement based on Lehrer's view has been extended to labels such as "physical phenomena", "chemical phenomena", "political processes and events", "social processes and events" etc. then some subject areas will be gradually shaped into being that are possibly well-known by the terms like "physics", "chemistry", "political science", "sociology" etc. A subject may thus be eventually viewed as set of semantic fields, where a semantic field is defined as collection of semantically related words. A set of semantic fields has always been recognized by one or more mass-acceptable terms depending on context and meaning of the constituent words in one or more semantic fields, which may be regarded as name of the subject. Ranganathan[10] declared the subject as an "assumed term". It is thus important to note that Lehrer's view about semantic field and subsequently Akmajian's extension of the same may depict a new picture about subject from the microscopic point of view. A subject may thus be defined as well-defined collection of semantic fields (since semantic field and foci are conceptually equivalent) and a semantic field is defined as semantically related words mutually linked through meaning and belonging to a particular context. This is the microscopic description of subject, that is to say a subject has not been regarded as continuum but collection of discrete entities like words.

The linguistic view of words and library and information science view of subject have been shown separately in Figure 1. The two views have been integrated and the linguistic view of subject has been shown in Figure 2. Being the smallest constituent part the word may be conceived as the molecule of a subject.
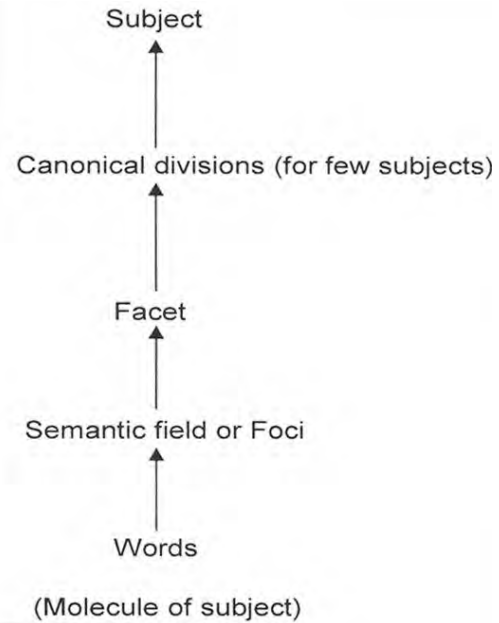
In Figure 1, the linguistic and LIS views are shown separately, while in Figure 2, both views are shown collectively.

Conclusion

The concept of subject from the viewpoint of linguistic interpretation has been discussed here. Researches in LIS generally emphasize on subject heading or term descriptor that are useful for indexing and cataloguing. The concept of subject in the context of LIS is thus, by and large document-dependent. The principal facets in which concept of subject in the context of LIS have been so long interpreted includes aboutness, content analysis, theme representation and topic concept. The subject was also defined as epistemological potential of documents. All these definitions portray subject on the canvas of documentary concept. These interpretations described subject macroscopically, i.e. considered subject as a continuum functioning on the foundation of documents. In this paper, the subject has been described from a new perspective, i.e. from linguistic point of view, which is a microscopic description. The subject has been logically interpreted as collection of well-defined and semantically-related sets of words that may also be interpreted as molecule or the smallest indivisible part or an eventual smallest denomination of the subject. Ranganathan's ideas of subject has been interpreted here in terms of Lehrer's and Akmajian's concepts of semantic field. An

amalgamation of celebrated library scientist's view with distinguished linguist's concept unveiled a completely new picture about the concept of subject.

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