CHAPTER IV

VOCABULARY IN ELT AND ESP

4.1 Introductory

4.1.1. Language, as is well known, is an immensely complex phenomenon. This complexity manifests itself most potentially when one tries to analyse and describe it. It has been proved beyond doubt that the totality of its features can not be described all at once, by one method and within any one scheme of categories. Of necessity we split the language and set up different levels of analysis. It facilitates the task of analysis and description by helping to concentrate at any one time on different but interrelated aspects of the subject matter. As a system language operates with the support of a network of sub-systems. The recognition of the sub-systems, the exact demarcations among them and the determination of their status with reference to the totality of the system must naturally depend on the amount of support each of them lends to the working of the whole. The sub-system that usually seems most obvious, even most important but very often refused the status of a sub-system, is the word-stock, also known as vocabulary or lexis. We may think of this as our total collection of names for things: the names of actions, objects, qualities and so on. The more words we recognise and use the better we are able to enjoy our environment and describe our experience of
it. Understanding the vocabulary system of a lan-
guage is the prime concern of a learner.

4.2 Lexis as a Linguistic Level

4.2.1 There are several levels of structure in a
language. They are, of course not wholly independent
but for the most useful description each must be
clearly distinguished from all others. The different
levels that are considered profitable to recognise,
their exact boundaries and the way they are to be
interrelated is a matter of continuing debate. Such
relatively familiar terms as phonetics and grammar
refer to two such levels. By extension the 'term' level
can also be used to designate those aspects of a lan-
guage on which at any time the analyst is concentrat-
ing. Similarly, dividing an account of a foreign
language into different topics, e.g., spelling, pro-
nunciation, grammar and vocabulary etc. is doing just
that. There have been various ways of dividing and
various names for the divisions because there are
many different purposes. There are, above all, many
different kinds of things to say in each division. It
must, however, be clarified that it is not language
itself which is divided like this. It is in fact the
operation of the analyst which demands this division
and thereby enables him to make analytic statements
in each division. The traditional tripartite division
--- substance, form, content or phonology, syntax,
semantics --- is a simplification in many ways. One of the factors ignored is the division between syntax and lexis.

4.2.2 The two interpenetrating ways of looking at language form are Grammar and Lexis. The two have been traditionally bracketed together yet we gain by separating them. First, because they represent two different ways in which language is organised and there are different things to be said about each. Second, because it helps in highlighting a significant aspect of language in our effort to devise a model suitable for the purpose in view. The model most useful for language teaching purposes can ideally be one which makes the task of the language learner and that of the language teacher easier.

4.2.3 The distinction between grammar and lexis is discernible with reference to the varying range of possibilities that arise at different places in the language. Grammar deals with the grouping and classification of recurrent elements in the structures of utterances or stretches of writing both in terms of their functional places and relations. Grammar is thus organised on two dimensions, viz., syntagmatic, i.e., relations holding between elements forming serial structures at a given level, and paradigmatic, i.e., relations holding between comparable elements
at particular places in structures. A limited number of regular patterns in a language enhances the possibility of infinite number of utterances in that language. These patterns are composed of members of a limited number of classes of elements in various statable relations. In grammar we look at the patterns of language as if they could be described by a large number of separate choices, each choice being from a small list of possibilities. In each case the possibilities can be itemised in full and we can talk of choosing one item rather than the other. Grammar is thus concerned with a choice among a small and fixed number of possibilities and draws a clear line between what is possible and what is not. There are other places, however, where we are choosing from a very large number of possibilities, we can not even count them or draw a clear line round them such as will separate what is possible from what is impossible. This is the domain of lexis running parallel to grammar. Grammar deals with closed system choices which may be between -- (a) items, e.g., this/that, I/you/he/she etc. or (b) between categories, e.g., singular/plural, past/present/future etc. Lexis, on the other hand, is concerned with open set choices which are always between items, e.g., park/garden/room etc.

4.2.4 Grammar organises language form in its own terms and generally ignores any patterns that do not resolve themselves into system. It fails to distinguish between items of an open set where there are more items with a similar or at least overlapping shapes and functions to choose from at any given point. Bloomfield described lexis as an appendix of grammar, and a list of basic irregularities, that is to say, lexis deals with that part of the functioning of language that has not already been and can not be treated under the general classes and categories of grammar. It is undoubtedly a potential advantage that closed systems lend themselves to more abstraction and generalisation than do open sets, that is, statements made in grammar can account for a large number of events than those made in lexis. In lexis every statement has to be based on more observations and yet it accounts for fewer events. In other words, we have to take larger samples in order to describe the lexis of a language. The enormity of the task can not be accepted as a justification for ignoring it or treating it in a superficial manner. The weakness of the grammatical apparatus in handling the vocabulary system necessitates an investigation that would reveal facts about language not usually ascertained by grammatical analysis. Language itself does not draw a clear distinction between grammar and lexis as there is a continuous gradation in the
patterns of formal choice. Grammar in part consists of words and words too owe a lot to grammar. Pedagogy, however, has to draw a line because these two types of phenomena need different approaches and strategies to account for them. We can not account for the patterns of grammatical type and patterns of the lexical type with the same categories and relations. Since language is the concern of the linguist in all its aspects and pedagogy draws substantially upon the linguists' analysis and description we can, and profitably so, reinforce the setting up of lexis as a distinct part of the language form.

4.2.5 This aspect of language form has been known for a long time and recognised since the earliest days of linguistics. In our times, Firth (1957) stresses the importance of lexical studies in descriptive linguistics and shows that it is possible and useful to make formal statements about lexical items and their relations. Halliday (1966), taking a cue from Firth, suggests methods appropriate to the description of lexical patterns in the light of a lexical theory that will be complementary to but not part of the grammatical theory, and proposes to set up lexis as a linguistic level. He holds:

All formal items enter into patterns of both kinds. They are grammatical items when described grammatically as entering
into closed systems and ordered structures, and lexical items when described lexically, as entering into open sets.

Thus out of a total mass of formal items recognisable in a language we seek to recognise grammatical items and lexical items. We have to separate the two in order to say anything useful at all not only in the analysis but also in the presentation. The levels first separated are brought into relation with each other, in terms of an orderly hierarchy of levels, in the description of a language which forms a unified whole.

4.3 Lexis and Language Teaching

4.3.1 The proposal of setting up lexis as a linguistic level can be fruitfully utilised in language teaching at various levels and for various purposes. Vocabulary has always been a part of the teaching curricula but it has suffered from many a confusion arising out of its status in the totality of the programme. Much of the confusion has perhaps been due to the uncertainties in linguistic approaches to language description and the prestige of grammar.

The term 'grammar' has been frequently used with an enlarged meaning referring to the total system of language and its description. At best, grammar is that part of the system of a language which can be described in terms of generalisations or rules. On the other hand, lexicon has often been characterised as a list of all the particular facts about the language which can not be generalised into rules. But particular facts are not always particular, they are also liable to include irregularities. Moreover, particular facts can also be stated with reference to certain elements (i.e., lexical items) generally commensurate with grammatical units we know of as words. But in certain cases a lexical item spans a piece of syntax larger than a word. In any case, a lexical item has to have its pronunciation and meaning specially stated and therefore, the lexicon impinges on all the three levels of phonology, syntax and semantics. A lexicon, therefore, is not a mere 'appendage' of grammar, i.e., an indexing device subservient to the mechanics of grammar, but a vehicle of linguistic statement which deals with the deepest, most secret part of language.

4.3.2 It seems imperative that lexical studies involving the scientific study of lexical items, their constituent elements, meaning, form, usage and derivational processes etc. should be recognised as an essential part of language teaching programmes.
and assigned its rightful place in EFL/ESL and perhaps more rewardingly in ESP setting. Lexical studies dealing with the 'formal' aspects of vocabulary organisation, the environmental aspects of its use, lexical structure of a text, lexical descriptions of specialist discourse etc., open up exciting areas. The problems are immense but we have an open field to experiment and innovate. We can appreciate what has proved successful in other times and places. We can repeat and refine what we have found to be effective in our circumstances with our learners. We need not be bound up with the taboos, social and linguistic alike, about the boundaries and prestige of grammar or vocabulary (or for that matter a sentence or morpheme) we should rather be sensitive to imaginative, stimulating and resourceful teaching which will arouse and sustain effective and self motivated learning. The teaching of vocabulary due to its enormous bulk is one such area which students fear most and which offers a challenge to the profession.

4.4 Vocabulary ... Definition and Scope

4.4.1 The word vocabulary has different meanings. In its widest sense it refers to the total stock of words in a language. Does it then refer to this 'stock' as listed and defined in an authoritative dictionary? or also to those which have not yet found acceptance
and inclusion in a dictionary but are in common use in polite circles. We know that few dictionaries manage to keep pace with the ever-increasing arrivals in the word stock. Johnson's dictionary, despite his industry, was far from exhaustive and, in a way, failed to reflect fully the language spoken at the time. Larger dictionaries, with all their merits acknowledged, contain many learned and technical terms not part of the language in common use and list many obsolete words also. Moreover, the larger the dictionary the less it will be possible to produce new and revised editions sufficiently frequently to include new words.

4.4.2 The word vocabulary also means the stock of words used by a people, or by a particular class or person. It can be shown that there are regional vocabularies, class vocabularies, occupational vocabularies confined to relatively small groups, and lastly the vocabulary of an individual as obtained in the stages of acquisition and development throughout life and also distinct in some way or other from that of other people in the circles in which he moves. Individual vocabulary is often characteristic of one's style. We sometimes recognise people on the basis of the words used by them. No two people use exactly the same words or use them in the same way.

4.4.3 Individual vocabulary is often very much restricted. According to Encyclopaedia Britannica
a normally educated person has a vocabulary of twenty to twenty-five thousand words though most of us find some four to five thousand quite sufficient for our daily needs. We hardly use all the words with which we are familiar. According to an estimate Shakespeare used some fifteen thousand words and Milton only about eight thousand. The originators of "Basic English", however, think that eight hundred fifty with the addition of a few specialised words are enough for all day to day purposes. There are two obvious factors of an individual vocabulary -- the words one understands and the words one actually uses. Within these one uses certain words on special occasions. Chaucer called this last type, "heigh style, as when that men to kynges write". Vocabulary may even differ with the strata of society in which it is used.

4.4.4 Vocabulary is the vehicle for thought, self expression, interpretation and communication. 'It enables us to think, speak and write coherently, logically and legibly'. It is the basis of the communication of ideas and of grasping the ideas transmitted to us by others. With a reasonable amount of words in our possession we do not just read or converse or write but enjoy what we do. Vocabulary deficiency, on the other hand, deprives us of the satisfaction of knowing precisely what we converse about or read and thus of being able to share that knowledge with others. Vocabulary is an aid to achieve the . . .
requisite sprachgefühl, feel for language, in order to handle the language effectively in different situations. Language performs a valuable social function and the vocabulary of a language provides a referential apparatus. Vocabulary as an essential tool of our language mechanism equips us to say anything we need to say. Words have a valuable social function of some sort to perform and society trains the individual to say the socially appropriate things in response to socially undetectable stimulations.

4.5 The Vocabulary of English

4.5.1 The English language has the richest and the most extensive vocabulary of any language in the world, "due partly to historical factors, partly to what we may call the 'genius' of the language". English has always been ready "to absorb foreign words and coin new words for ideas for which the existing foreign terms were not found for some reason acceptable".¹ English has always welcomed the alien, accepted with comparative equanimity words from other languages with which it has been in contact. Serjeantson (1935) highlights this process:

The English language has ever been open to foreign influences, partly through the succession of invaders who came into contact with English speakers during the Middle Ages; partly through the enterprise of the British

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themselves who have carried their language into the far corners of the world, where it has gathered new matter as it passed its way.¹

Thus, contacts between peoples of alien speech through conquests, colonization, trade, literature, introduction of new ideas and objects, changes in social conditions, the widespread increase in culture and education have been some of the prime factors responsible for the enormous growth of English vocabulary.

4.5.2 Vocabulary of a living language is never stationary. It is constantly changing, growing and decaying. To estimate the size of the vocabulary of any language at a given time is very difficult. The number of recorded Anglo-Saxon words in the vocabulary of English is rather less than fifty thousand but today the bulk of this gigantic vocabulary is roughly approximated to a million. This huge stock of words available to us today invites us to consider the ways in which vocabulary development can be handled. In the field of pedagogy the problems are obviously immense.

4.6 Vocabulary Selection ., ELT

4.6.1 The realisation that the whole of English vocabulary is neither teachable nor appropriate gave rise to the formation of several strategies and the application of different techniques, viz., restriction, limitation and selection etc. An illustration of a

systematic effort in this direction is provided by the technique of 'vocabulary selection'. By vocabulary selection we generally mean the deliberate choice of particular sets of words for teaching purposes. The particular aim of this exercise has been to provide foreign learners with an indispensable minimum vocabulary... 'by eliminating all words outside the minimum the learners would avoid wasting their time on unnecessary items'. The various criteria applied for choosing one word and rejecting another have, however, been debatable. The most obvious seems to be 'frequency of occurrence' and all vocabulary selection appears to be based on lexical frequency counts of one kind or another.

4.6.2 Let us examine briefly the history and principles of vocabulary selection. The first two decades of the twentieth century attempted to popularise the direct method of teaching English with no use for translation or mother tongue and paid no attention to vocabulary studies. In the third and the fourth decade, however, ELT field was dominated by vocabulary selection and control. As early as 1904 Jesperson had offered a principle of selection... "the most everyday word"... in the teaching of English as a foreign language. It was this principle perhaps which directed the way for the efforts in the 1930s and 1940s when the slogan was -- "the useful words are the frequent words".
4.6.3 In 1921 Thorndike started working on vocabulary and the correction of errors in the language written by native children. He used only written materials and applied the method of objective count based on the frequency of a word in a given corpus. In 1926 Michael West provided another angle by preparing a dictionary of forty thousand words defined in terms of 1490 words, known as Defining English. Later in 1928 Ogden and Richards published Basic English, containing 850 words, aimed at achieving the maximum economy in words. This work adopted the principle of 'one notion -- one word' and thus eliminated all synonymous terms. It reduced the number of verbs on the plea that they are the most difficult to teach. It uses only eighteen 'verbal operators' and collates them with nouns, adjectives and adverbs to find substitutes for verb forms, e.g., go (come) in/away = enter, depart; give in = yield; gets by heart = to learn; keep in mind = remember, etc. Basic English is an enlightening contribution but it employs a strictly productive vocabulary, useful for expression but unsuitable for reading and writing.

4.6.4 Thorndike’s Teacher’s Word Book (1921), Horn’s Basic Writing Vocabulary (1926) Faucett and Maki’s Study in English Words (1932) were among the first works to put forward what they claimed to be more accurate lists by comparing and combining the
existing word-lists. In 1932 the original edition of Thorndike's Word Book was reissued after the vocabulary had been extended from ten thousand to twenty thousand words as a result of 'further counts'. Another landmark in the field of vocabulary selection is the Carnegie Conference held in New York in 1934. The conference appointed a committee consisting of Faucett, Palmer and West with Thorndike and Sapir as consultants entrusted with the preparation of a vocabulary list. The Committee brought out the Interim Report on vocabulary selection in 1936, the most widely accepted and the most authoritative list uptodate. For the first time spoken utterances were used alongwith the written material for purposes of vocabulary selection. The committee collected half a million written words from fifty types of different texts and half a million spoken words from telephone conversations and prepared a list of two thousand words of general service use. The report was later on to be revised but the second World War broke out and the revision could not take place. Michael West, however, revised the list and published it in 1953 as General Service List (GSL) of English Words containing the same number of words.

4.6.5 The principles that guided and governed the preparation of the Interim Report and later on the GSL can briefly be reviewed here -- (a) frequency of a word in a given corpus, (b) range, i.e., how
many topics a word can cover, (c) expandability, i.e. inflection or the related semantic varieties of a word by adding prefixes and suffixes, (d) definition value, i.e., words that are helpful in defining other easy or difficult words, (e) universality, i.e., words which may not be frequent but are supposed to be of universal usage, (f) structure and content words, i.e., words we talk with and words we talk about, (g) semantic breakdown of words, i.e., choosing the most frequent and most useful meaning.

4.6.6 Language is so complex that selection from it is always one of the most difficult problems faced by anyone who wishes to teach it systematically. Roughly a language system can be considered as consisting of words entering into grammatical constructions. To find the minimum number of words that could operate together in grammatical constructions in different contexts has been the chief aim of those trying to simplify English for the learners, foreign learners particularly. Various criteria have been applied in choosing the word but the dominant activity throughout the period among all those concerned has been vocabulary selection. Random selection is a wasteful approach and only a complete system capable of continuous enlargement can form a satisfactory objective for the first stage in any attempt to grasp as much of the entire language as may ultimately be necessary.
4.6.7 The many possible lines of approach applied in vocabulary selection can be traced to two broad viewpoints—linguistic and didactic. The practical teacher ought to favour the didactic approach for the linguistic angle can be fully considered when the subject of enquiry is language. Vocabulary selection subordinated to the purpose of facilitating the process of learning within strictly defined limits serves the learners' interest best. We, as teachers, should concern ourselves with the simplification or description of language. Two main ways for compiling vocabulary lists for the aforesaid purpose have been recognised, namely, the subjective and the objective count. According to subjective method the compiler selects words which seem to him most worthy of inclusion at each particular stage but such lists have extensive discrepancies because they are based on personal judgement. But there is no perfect method for a purely objective count either, which would establish absolute values. Objective method is usually based on the number of occurrence for all words appearing in a representative body of literature (e.g., newspaper reporting, editorials, novels, essays, plays, poems, letters and textbooks etc.) where the number of recurring words counted extends to several million the derived list of frequency may be considered as having the authority of investigation with which a personal judgement can vie. But word frequency counts
of either kind do not provide an absolute measure applicable to all purposes since they are based ultimately on matter selected on the very basis of personal judgement.

4.6.8 A pragmatic viewpoint supports the didactic approach as the basis of word evaluation. Important distinctions between vocabulary needs for productive and receptive purposes in a variety of contexts must never be ignored. Smaller vocabulary may be found wanting when it is proved to lead only to the production of a vocabulary for personal expression and not for the understanding of normal English. The arguments in favour of restricting the vocabulary for expression in speech and writing may be understandable but fixing an equally restrictive range for reading will not do. Smaller vocabularies are intended to establish a 'vocabulary island' as is well known, we should rather do better by drawing up 'foundation vocabulary' of the most useful words for both productive and receptive purposes. A didactic approach is best suited to achieve these aims as it permits the consideration of all the relevant features, e.g., psychological, situational, social, linguistic and the like.

4.6.9 Historically speaking, vocabulary studies made a significant advance up to the 1940s but in the fifties and sixties they have been subordinated to syntax and grammar. Phonology and morphology have been the main concerns of structural linguistics, with hardly
any interest in the 'word' as such but rather in units smaller than the word. The Chomskyan revolution too focussed on the centrality of syntax and Transformational Generative Grammar concerned itself not with the 'word' but with units larger than the word, i.e., the structure of phrases/sentences, which were assumed to be made up not of words but of morphemes. Words as such played no real role in the scheme of things.

4.6.10 In more recent years, however, linguists have started paying attention to vocabulary again. Lexical studies are being taken up by various linguists and considered from different points of view -- phonological, syntactic and semantic. 'Word' appears to have become the object of the latest concern not only of the linguist but of the psychologist and the philosopher as well, in a search to find out how word formation reflects language in general. The study is expanding, "blending various theoretical viewpoints...synchrony, diachrony, morphology, phonology, syntax and semantics". This renewed focus of attention on vocabulary studies is striking in many ways; above all it can be seen as developing against the backdrop of the specialised vocabulary needs of the specialist learner (ESP), a phenomenon which runs parallel to the restoration of lexical studies to the prestige they deserve.

4.7 Vocabulary ESP

4.7.1 Untill comparatively recently English courses have been intended to teach a generalised

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English, the framework making some degree of allowance for the level of teaching and the maturity on the part of the learner. The application of the linguistic techniques in the field of vocabulary selection have mainly been concerned with general ELT. A study of the specific vocabulary needs of the specialist learner in the diversified areas of his study/vocation, and the preparation of word-lists specially compiled for one particular group of learners have rarely been attempted in a systematic and purpose-oriented fashion. The distinction between language teaching for general educational and cultural purposes and language teaching directed solely towards practical ability has become imperative due to the vast increase in the demand for English to be taught to learners, mainly adults, outside the normal educational system. These learners have aims manifestly different from those of the average secondary school student. These special aims relate to national requirements of an institutional kind, for academic specialisations, for professions and vocations, and have precisely been responsible for the emergence of new style courses and corresponding strategies. Special aims require special treatment, of materials based on a close analysis of the specific needs of the learner, and of our techniques and methodologies in terms of their utility. Analytical studies of specialist texts carried out on the basis of large samples of language used by particular fields in order
to discover all those features which make them distinct from other types of discourse appears to be a step in the right direction. And as Halliday et al (1964) observe...:

the crucial criteria of any given register are to be found in its grammar and lexis. Probably the lexical features are the most obvious. Some lexical items suffice almost by themselves to identify a certain register.¹

... the clearest signals of a particular register are technical terms. A study of the technical terms employed by a specialist text not in terms of the frequency of their occurrence alone but on the basis of their potential to contribute to the conveying of special messages in different forms, i.e., reading, writing, speech etc. may prove to be of substantial help to the ESP learner.

4.7.2 Language serves a great variety of purposes and utterances perform a very wide range of functions. Within any one language notable differences of use in part employing differences of vocabulary and composition but mainly drawing on a common grammatical and lexical stock must be recognised. To cope with the variety of purposes and meet with ever growing demands language is organised with the help of a set of grammatical rules and a system of symbols by means

of which we can refer to the entities in the physical world and can express most abstract concepts. The notion of the 'field of discourse' or for that matter of 'communicative purpose' implies a significant differentiation in grammar and lexis, the lexical being more prominent. In terms of syntax there is the practical possibility of mastering the system. The problem of lexis is much less tractable and a severe obstacle to the processing of the message.

4.7.3 Every language has a built-in potential to fulfill the needs of its speakers in carrying out their social and occupational activities. In different situations we assume different roles and choose the relevant linguistic code available within the language. Age, relationship between the speaker and the hearer, occupation, topic of discourse and a number of other social, psychological and linguistic factors determine the choice of words and expressions. For instance, a jurist playing with his grandchildren will employ a vocabulary substantially different from what he uses in a legal debate. Similarly, many of the words that a sheep farmer uses in the pursuit of his occupation are bound to be strikingly different from those used by a physicist in his field. Again, a farmer may not be able to participate very actively in a discussion on fine arts or nuclear physics but he is likely to outwit others by talking about cattle disease and the different parts of a plough (Quirk, 1962:22).
4.7.4 The choice and employment of a particular linguistic code is sometimes natural and instinctive, and sometimes deliberate and obligatory. The former can be referred to as 'ordinary' or 'natural' use, or in other words, what language chiefly exists for, and the latter, as the specialised use of language. English has been widely used for such special purposes and as Candlin et al (1978), pointed out "there may be as many Englishes for special purposes as there are disciplines expressed in English." Thus we come across Scientific English, Medical English, Business English and so on. Further categorisation within these broad divisions depending on the degree of specialisation is also possible. In several other fields where the needs are relatively limited we find varieties usually referred to as 'registers', e.g. cookery, advertising etc. Further, we witness 'restricted uses' of English in fields like tourism, printing and publishing, international air transport etc. Still further, we have jargon and slang like what can be observed in a dockyard, in a sailors' inn, in a highway pub etc.

4.7.5 There are considerable linguistic differences involved in the use of English for different purposes but various analyses of purpose-specific texts reveal major differences in the use of lexical items. English

in its totality appears to be an abstraction manifesting itself in a wide range of different, partly self-contained forms of communication. The total range of English presents a complicated picture even to those who are born to it and certainly too vast for the foreign learner who must restrict himself to acquiring only so much as corresponds to his practical needs. It must, however, be noted that the basic structure of language is fundamental to any specialised use. We have to start from the ordinary or natural use only to move to the special rise later. A sound knowledge of the working of English and a reasonable amount of the general vocabulary of English is essential to the utilisation of English for specialised and sophisticated purposes. The first prerequisite of a special use is the acquisition of a special vocabulary.

4.7.6 ESP is, by definition, identified with special subject areas and topics. ESP consumers too are identified by their subject/job specialisms. Linguistic differences between the subject areas being mainly centred around vocabulary it becomes evident that lexis assumes a nuclear position in the preparation and interpretation of ESP materials and, therefore, the principles and techniques of lexical studies can be fruitfully extended to ESP with a renewed vigour. ESP demands a special focus on lexical items which are characteristic of the field of discourse.
4.8 Specialist Vocabularies

4.8.1 The fact that the enormous bulk of the vocabulary of English consists largely of learned words and technical terms coming from different foreign sources at different times deserves an investigation into the growth of specialised vocabularies used by the specialist for specific purposes. The extension of the boundaries of knowledge causes the language to cope with new ideas for as knowledge grows language grows with it. New words are always needed to express new ideas, new perceptions and discoveries and to give names to new inventions. Literature, philosophy, art, music, social customs and fashions have all been responsible for the introduction of specialised words in the English language.

4.8.2 Every trade or art has its own technical vocabulary. Technical or specialised words have always existed or have been borrowed from time to time according to needs. Technical terms are needed to denote new applications of knowledge from different spheres of human activity. Just like the social, cultural and academic factors mentioned above trade and occupation, vocation and profession have accumulated a large corpus of technical terms unfamiliar to the non-specialist and indeed not needed by them. Technical vocabulary serves the specialist in many ways, above all it saves time as it is much quicker to name
a process than to describe it. Hoggart (1977) points out two important reasons why technical vocabularies are sometimes indispensable. He observes:

Specialists do need specialist terms for at least two good reasons -- as forms of shorthand to speed up discussions between themselves, and as safeguard against their analyses being misinterpreted because some of their words might be read in more than one sense -- their language must be so far as possible cleansed of the ambiguities of subjective reading.¹

4.8.3 Technical terms constitute specialist vocabularies. Specialist vocabularies exist within the general vocabulary of a language and enlarge its total range. Technical terms have likewise played an important role in the extension of the vocabulary of English. Perhaps more than any other factor it is science that has solely been responsible for the introduction of the largest number of such learned or technical terms of specialist use. It is definitely relevant to the scope of this study to consider briefly the growth and nature of the specialised vocabulary of science as it is fundamental to the organisation of the much debated 'language of science'.

4.9 The Vocabulary of Science

4.9.1 Chronological studies have revealed the existence of certain terms of learned use in the native tongue that was brought to the British islands in the 5th century by the Germanic tribes who eventually overran the Britons and since then there appears to be a continual presence and introduction of such terms either borrowed or adopted, even coined according to need. Both in the Old English and Middle English period we find lists of names of plants, animals, and mathematical and astronomical terms of Latin, Greek and Arab origin making their way into the language for scientific use. Chaucer's A Treatise on the Astrolabe (an instrument for ascertaining the position of the stars, for the use of his little son, Lewis: 1391) is a reliable evidence of many of the scientific terms in educated or specialist use at that time. Science or natural philosophy as it was then called must have been confined to the learned use and Chaucer's use of words like 'latitude, longitude, meridian, zodiac, ecliptic, equator, equinox, horizon, declamation, degrees', etc., establishes the fact that he had a considerable knowledge of these specialist areas. The Prologue to the Canterbury Tales presents such other specimen, as for instance the following couplet ---

Ther nas quicksilver, literate ne brimstoone
Boras, Ceruce ne oille of tartare noon.
Similarly Canon's Yeoman's Tale includes many terms from the vocabulary of Alchemy. It is interesting to read such lines as ---

As bole armoniak, verdegrees, boras

OR

Arsenik, Sal armoniak and brimstoone

OR

Sal tartare, alkaly and sal preparat.

4.9.2 In the fifteenth and the sixteenth centuries the vocabulary of science manifests a slow growth. The chief reason for this was the custom of writing all important materials in Latin. For most of us today Latin is a dry, dead language but in the sixteenth century England it was a vital living language used in the service of the church, the accepted universal language of philosophy, theology and science. When English proved inadequate to deal with the huge influx of new ideas which came in with the Renaissance borrowings from Latin became inevitable. In the seventeenth century, however, the vocabulary of science improved its pace as the advance of science became rather rapid. It is the period which witnessed the lives and works of such famous scientists as Harvey, Newton and Boyle. Science at this time was read in Latin but it was talked about in English. The scientists went to the Greek language too for the multitude of new terms which they needed. By the
end of the seventeenth century a scientific vocabulary had begun to take shape. The process was intensified in the eighteenth century when new discoveries in Chemistry, away from the limitations of medieval alchemy, added a large number of new words. Nineteenth century witnessed a flood of scientific words composed of Latin and Greek elements usually newly coined, an evidence of the increasing degree of specialisation in science and characteristic of the developing language of science. An outstanding feature of the twentieth century vocabulary of English is directly related to the extension of scientific vocabulary paralleled only in the period following Renaissance. Thus we have today a highly sophisticated vocabulary of science in English.

4.9.3 The specialist vocabulary of science and technology that has grown through the centuries has equipped the scientist with a language often referred to as the 'language of science'. This language of science is chiefly characterised by a "wealth of words expressing a wealth of ideas". We may ask ourselves why such a vocabulary was necessary, how the words were formed or borrowed or coined and from what kind of source material, how much of it has remained the particular province of the scientist. These are obviously technical questions and require

2. Ibid., p.58.
analytical and systematic studies. We propose to consider them howsoever briefly but before doing that it appears to be more appropriate to examine the nature and potentiality of these words which contribute to the making of the 'language of science' so distinct.

4.9.4 For the purpose of scientific description we need a language that is exact. A scientist is strictly concerned with his purpose. He does not seek to arouse emotion or present beauty by imaginative exploitations of the language. He rather seeks to make himself understood and if he succeeds in this he is content to leave 'the purple patches' to those who need them most. Brook (1981) aptly remarks, "haunting rhymes are unnecessary and the association of ideas which contributes so much to the appeal of the language of poetry are a nuisance to the scientist." Vagueness or for that matter, suggestiveness, i.e., leaving much to the imagination of the reader, a virtue in poetry is no less than a curse for the scientist. He needs only to be confident that his hearer or reader will attach exactly the same meaning to a word that he himself gives to it. Sheard (1962) quotes a valuable definition of the language of science given by Whewell...

"when our knowledge becomes perfectly exact and intellectual we require a language which shall also be exact and intellectual, we shall exclude alike

vagueness and fancy, imperfection and superfluity, in which each term shall convey a meaning steadily fixed and vigorously limited. Such is the language of science."

4.9.5 By way of illustration we can quote a sample of the language of science, quoted by Savory (1953) 'from a scientific journal':

Begoniaceae by their anthero-connectival fabric indicate a close relationship with amonaseo-hydrocharideonymphaeoid flexuosono-dulous stem, the liriodendroid stipules, and cissoid and victorioid foliage of a certain Begonia, and if considered hypogynous, would in their triquentrous capsule, alate seed, apetalism and tufted stamination, represent the floral fabric of Nepenthes, itself of aristolochioid affinity, while by its pitchered leaves, directly belonging to Sarracenias and Dionaceas.²

The specimen quoted above appears to be frightening to the non-scientist but at the same time contains much of interest to the student of specialised vocabulary. A cursory glance would convince one of the complexity of syntax and the preponderence of


highly specialised technical terms. An analyst may, however, succeed in resolving the syntactic complexity at a closer reading and decide upon the presence of five verbs pointing to the presence of five embedded sentences, the principal verb being 'indicate' followed by an object suggesting an S.V.O. pattern, followed by a defining relative clause consisting of three identifying objects listed serially, followed further by a compounding conditional clause manifesting its twin resultant options, the second of the options further qualified by a relative clause of concession at the end. Any kind of syntactic analysis, it appears, will not resolve the difficulty of comprehension. What strikes one as the biggest obstacle to comprehension is the presence of specialised terms. And these terms will not yield to the kind of analysis just made. One can, by way of a general observation, remark that each word has been placed in its most befitting position and that the complexity of syntax is directed towards achieving utmost economy and the highest degree of precision. But it is abundantly clear that the claims of objectivity and precision in scientific description are largely realised by the choice and use of specialised words from the lexicon of science where meanings are exact and definitions limited. The focus ultimately remains on a specialised vocabulary and demands the application of sophisticated techniques to the study of specialist vocabularies.
4.9.6 Another illustration not quite so fearsome..

A gulf divides the exaltations of the mystics from the tachypraxia of the microplanchnchic hyper-thyroidics or the idea-effective disso-
ciations of the schizothymes.

...brings home the same point, i.e., the necessity of paying special attention to the specialised vocabulary used in scientific language.

4.9.7 Reverting to the questions raised earlier (4.9.3) as to the necessity and the source material of the vocabulary of science we can observe that logical and exact communication which is the first requirement of the scientist demands a language which should have an effect not over men's heart and emotions but over their minds and efforts. And such a language requires terms characterised by 'mono-significance', terms which not only have a precise meaning but remain emotionally neutral. Some of the points that are raised by way of criticism, adverse comments and judgements by the non-scientists against the pecu-
larity of the language of science focus upon the inherent features themselves rather than the draw-
backs, as they are calculated to do, of the language of science. The language of science has often been called too impersonal, abstract and over condensed, often characterised by the overuse of learned words where ordinary and more familiar ones are available. The apparent unfamiliarity of the words used in science sets them apart, in a peculiar way, from the everyday
vocabulary. This is obviously an advantage. Familiar words of everyday speech are prone to misleading popular associations making their meaning often vague and indeterminate, depending more and more on the context for a better grasp. The strangeness of the words of science, on the other hand, gives them a constancy of meaning so important for the scientist. Bradley (1968) gives an interesting example to substantiate this point:

...if for example, the English founders of the science of geology had chosen to call it 'earthlore' everyone would have felt that the word ought to have a far wider meaning than that which was assigned to it. The Greek compound 'Geology' which etymologically means the same thing has been without difficulty restricted to one only of the many possible applications of its literal sense.  

4.9.8 The words used by the scientist for scientific description and discussion can be broadly classified into three main types. First, the words taken from the native vocabulary of general use but used with a particular force to keep them away from ordinary associations. The word 'salt' means the same thing the world over to everybody but the scientist insists on calling it 'sodium chloride' and instead

uses the word 'salt' for another chemical compound. The second type are words borrowed from foreign sources and pressed into the service of science without any change of form or meaning. Thirdly there are words coined by the scientist for the expression of new ideas. Concerned not so much with the purity of language or linguistic restrictions the scientist coins his own words which are often hybrids and sound strange and ugly. The language of science is primarily concerned with efficiency and intelligibility not so much with beauty. The purists may claim that familiar native words are more expressive and contain within themselves more of history and spirit but the scientist prefers a word on the basis of its merit and not sentiment. To quote Prof. Sheard (1962), "dull as our -- ations, --isms, --ities, and --izes may be they are essential for the clear thinking and expression of science, politics, economics, with which our age is so much concerned".

4.9.9 Another characteristic feature of the language of science is the use of words of classical origin, mostly Greek and Latin. This is an outstanding feature which can be attributed to several causes, the most convincing being their own qualities coming as they do from, e.g., Latin, the acknowledged language of European scholarship, and Greek, the language of the people who led to world in art, science and

philosophy. Another reason which has persisted since antiquity and still being emphasised by present day scientists is the concept that the language of science in order to be most efficient must be universally intelligible. Since the meanings of Greek and Latin elements are so well known throughout the world that words composed of such elements are readily understood by the scientists the world over. It is undoubtedly easier to learn the meaning of elements in two fixed languages than to learn the corresponding ones in all the contemporary vernaculars. To this extent the language of science as characterised chiefly by a specialist vocabulary may be considered international. Jesperson (1905) holds that scientific nomenclature is to a great extent universal and "there is no reason why each nation should have its own names for 'foraminifera' or 'monocotyledons.'"\(^1\)

4.9.10 Still another factor which deserves a mention is the passing out of many technical terms from the province of the scientist to popular use,\(^2\) in other words the use of the specialist terms by the non-specialist. As science becomes more and more popular and its achievements more and more familiar many of the technical words pass into general use. It is where the trouble begins. Some of the technical terms become vogue words, gain prestige value and

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2. See 4.9.3.
gradually acquire emotional associations. Savory (1953) gives two interesting examples of this kind. He points out that 'peroxide' was originally a scientific term with no emotive content but because of the power of hydrogen peroxide to bleach hair it now has a derogatory sense when used as an adjective in an expression like 'peroxide blonde'. Similarly the word 'atomic' has acquired associations with 'terror' and 'destruction' because of the effects of the explosion of the bomb at Hiroshima. The general vocabulary of English may get richer by the adoption and inclusion of technical terms in popular use but the effects of semantic change do not affect the scientist in his laboratory. Considering the inflexibility of meaning as the prime virtue of scientific terminology he confines himself to his meaning rigidly. The constancy of scientific vocabulary and the scientists' insistence on mono-significance of specialist terms may also be illustrated by a reference to the British and American scientists using a common vocabulary although the language used for literary and other purposes has drifted considerably. We must, therefore, admit the claim of the scientist for a specialist vocabulary of science. We can not do otherwise.

4.10 Medical English Vocabulary

4.10.1 Within the broad confines of science there are many constituent sciences. They may overlap and contribute to each other's progress but they are
basically concerned with their own set of objectives and problems. In consequence each has developed, within the general framework of the language of science, its own patterns of specialist discourse characterised mainly by a vocabulary more or less, peculiar to itself. Thus a biologist seldom speaks or writes of a parochar, a chemist has no interest in a parasite, a geologist does not worry about a parabola (Savory, 1953:67). Among the specialised uses of English Medical English holds a distinctive position. Medical writing relies very heavily on a specialised vocabulary a great deal of which is not native but Latin and Greek. With a growing tendency towards specialisation Medical Lexicon stands out as an enormous stock of technical terms of specialist use encompassing multifarious disciplines and specialities that lie within the orbit of medical science.

4.10.2 Medical lexicon has been going strong for more than two thousand years accumulating specialist terms through the ages. Of course, through the centuries many of the words might have deviated from the original form and to some extent from meaning also but there is an amazing evidence of some words of current use found in the same form in the works of earliest medical writers. Hoppocrates, about 400 B.C., used such words as catarrh, sciatica, cholera, kyphosis, lordosis, etc. Galen who belongs to the first century of the Christian era (130-201) appears to have used in the hundreds of his treatises on the medical lore,
such words as skeleton, sarcoma, systole etc. Aristotle (384-322 B.C.) who surveyed the whole range of zoology and whose broad classifications have been accepted by later science uses, we are told, terms of much frequent use in the contemporary scene like 'leukoma, glaucoma', etc.

4.10.3 Since all sciences are studies of material things their first concern is the naming of the substances and objects with which they have to deal. A name, as we all know, may be just a label associated by general agreement with some concrete or abstract entity, yet names are extremely important, more particularly in science. We learn and tell others about our discoveries only after a substance or organism or phenomenon has been named. This process of naming so essential to the specialist areas of knowledge continually adds to the bulk of the specialist vocabularies. To trace the working of this process in the field of medicine we can go right back to the Old English period where besides a long list of names of plants and animals medical terms such as fefor - fever, mamme - breast, uf - uvula are used. The age of the medieval alchemy, a period before science, furnishes us with a host of technical terms although they are treated as part of the vocabulary of the alchemist rather than that of the vocabulary of the doctor in our sense of the word. Arabic medicine which has a distinguished record of medical knowledge and practice has made a valuable contribution to the medical lexicon. It is mostly in the Middle English period that we find
Arabic words making their way into the medical lexicon. Especially in the field of pharmacology we can witness terms like 'alcohol, alkali, alembic, naphtha, tartar, syrup' etc. Many other derivatives are easily recognisable by the presence of Arabic definite article 'al, el' affixed to a Greek stem, e.g., alchemy, el-exir, etc. Many of these terms are derived through the intermediary language, French. The Arabs were not only distinguished as physicians but as men of wide learning. Avicenna, the author of the Canon of Medicine, (a textbook of medical study in the European universities of the Middle Ages) was also a commentator upon Aristotle. Averroes (Ibn Roshd) - the Cordova-born physician and philosopher of the twelfth century, was a commentator on Plato and Aristotle.

The Arabs were highly skilled in the lore of the heavens and as medieval medicine was closely concerned with astrology it is not surprising to find words of this class introduced early, e.g., almanac, azimuth, zenith etc.

4.10.4 In the middle English period itself we find terms like diaphragm, ligament, saliva, ether, essence etc. being used. In the 15th and the 16th centuries most of the scientific works were written. Some words were, however, added to the medical English lexicon but not a great number. Among them we may note fungus, rheumatic, artery, virus, delirium and quite a good

number of names of diseases as epilepsy, mumps, scurvy etc. The advance of science in the 17th century was very rapid and with this most of the words connected with anatomy entered the medical vocabulary of English. By the end of the 17th century most of the bones and organs of the human body had received the technical names by which they are now known. The advance in medical knowledge is revealed by the presence of such words as goitre, pneumonia and rabies. Evidence leads us to maintain that by this time the human body and its weaknesses had been thoroughly studied adding corresponding terms to the lexicon to facilitate discussion of the newly acquired knowledge. Progress in anatomy and general medicine was markedly rapid as revealed by additions in the lexicon. A tremendous number of technical terms derived specially from Greek were thus added to the vocabulary and the process continued throughout the 18th and the 19th centuries as per the needs of the allied specialities.

4.10.5 An outstanding feature of the 20th century medical lexicon is a flood of medical terms composed of Greek and Latin elements, usually newly coined. This rapid expansion of the medical English vocabulary follows a great expansion in medical knowledge and offers itself as an evidence of the increasing degree of specialisation. The coinage of medical terms in

the modern times has often violated the linguistic norms of word formation, the sole prerequisite being a knowledge of the elements making up the word. This purely arbitrary method has been responsible for the coinage of certain compounds which never existed in the source languages. Thus the medical lexicon has attained massive proportions in the recent times, a kind of terminology explosion. New concepts, new theories and new discoveries surpass the available stock and consequently entail new groupings and coinages to describe and discuss them. Naturally, the succeeding generations of medical specialists have to cope with this stupendous bulk and to keep pace with the recurrent additions as well. An interesting feature of this vast expansion of the medical vocabulary is the spread of certain technical terms to general use at a comparatively faster pace. As Sheard (1962 : 132) remarks, 'iodine, aspirin, vaccination' have long been household words and 'calories' have made their way from the laboratory to the kitchen.

4.10.6 Medical English vocabulary is evidently a product of varied material. It is a confluence of diverse streams, embracing form and flavour of tributaries of various origins, adapted and modified to consolidate a lexicon of international use. The various obvious sources of this lexicon can be outlined as under:

a) Greek and Latin,
b) Anglo-Saxon, French, Italian, Scandinavian etc.
c) Arabic,
d) Dutch, German, Persian, Chinese etc.

According to a conservative estimate as much as seventy percent of the scientific element in English vocabulary is of Latin and Greek origin. The largest number of medical terms, however, stem from Greek entering English via Latin where they have undergone some change. Still others come from Greek via a second intermediary language such as French, with still further change. As an illustration of this process we can witness:

<table>
<thead>
<tr>
<th>Greek</th>
<th>chirurgia</th>
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<tbody>
<tr>
<td>Latin</td>
<td>chirurgia</td>
</tr>
<tr>
<td>French</td>
<td>chirurgie</td>
</tr>
<tr>
<td>English</td>
<td>cherugery/surgery</td>
</tr>
</tbody>
</table>

Terms like surgeon, plaster, migraine, palsy etc. have followed the same route. Another fairly large group is of Latin origin. Most of the words in this group are retained in their original form and the rest are derivatives which have naturally undergone some sort of change in their transfer to English.

Serjeantson (1935) enlightens us:

Some words have entered English, not by direct contact with the language which is its source, but indirectly through an intervening language. In this way many of the earlier Italian loans come through French, the earlier loan words from the east come through Latin,
many of them having already passed through Greek before reaching Latin...Words travelled thousands of miles, westward from Asia to Europe, across Europe from east to west and from south to north, all round the Mediterranean from nation to nation and from generation to generation.1

4.10.7 The words of the medical lexicon can conveniently be classified into three major categories: a) borrowed words, b) imported words, and c) invented words (Savory, 1953). Words taken by the scientist from ordinary native speech and given special dress for medical use belong to the first category. The word 'life' may be used in everyday speech in several ways but none of these meanings is the same as the biologist's. The botanist has given his own meaning to such common words as fruit and berry -- fruit being the product of the fertilised ovule of the flower which includes seeds and grains like maize or oats, and berry is defined in a way that it includes oranges and bananas also. Savory calls this ..."habit of seizing an unsuspecting word and forcing to do work for which it has no qualifications" ... outrageously, and further, a sort of "linguistic rape".2 Moreover, some of the borrowed words become so widely known and so familiar in their new context that their origins are forgotten. 'Dialysis' which originally meant 'a statement of alternative propositions' has become


accepted as essentially a medical term meaning 'the separation of crystalloids and colloids' in the blood.

4.10.8 The second category, i.e., imported words includes those words which were taken into the medical lexicon from foreign sources, mainly Latin and Greek, without changes in form or meaning except those required by transliteration. Since these words are not so familiar as the ones borrowed from the native sources the danger of confusion is less. These words are, therefore, best suited to the purpose of the specialist. This method of import was widely adopted in the early period when familiarity with classical languages was quite common among the specialists of different fields. These words are still a part of the medical lexicon in a large way, for instance, bacillus, axis, cortex, pollen, femur, salvia, semen, species, nectar, vertebra, larynx and so on.

4.10.9 Words coined by the specialists to meet their new requirements belong to the third category, i.e., invented words. Confronted with the need to express new ideas and to keep pace with the rapid advance in medical knowledge the specialist coins his own words. Words belonging to this category are by far the largest proportion of the medical lexicon and the number is increasing daily. The pattern of these coinages which belong to the present century shows little familiarity with the classical sources. Taking the formative elements from Greek and Latin
and compounding them or combining them with native elements often results in the production of forms unknown to Greece and Rome.

4.10.10 Thus the medical lexicon presents an alarming picture to a prospective medico. ESP is directly concerned with this problem. It seems rather odd to learn to read the different source languages or even Greek and Latin which offer the largest chunk. A short cut to the necessary information is inevitable and therefore, certain fundamentals of vocabulary acquisition and linguistic procedures of word formation and word analysis have to be learnt and fruitfully utilised. New strategies have to be formed and past techniques have to be reviewed in the interest of the ESP learner as also in the interest of effective teaching. The teaching of vocabulary in ESP (or for that matter in general ELT also) has to move a step ahead of the statistical counts of vocabulary items in isolation by treating them as occurring in characteristic networks and contributing to the overall patterns of meaning. Medical lexicon which is the accepted international terminology of the discipline and the profession is the prime need of the ESP learner of medicine irrespective of whether his own language is Arabic or Swahili or Hindi.