

DISCOURSE 1
 THE SCIENCE OF LINGUISTICS¹

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In briefest form, linguistics may be described as the scientific study of languages. The term 'study' needs little further discussion here - we understand by it the application of the intellectual faculty to the material which is to be studied. The qualification 'scientific', however, is a little more complex. When we say that a study is 'scientific', what in fact do we mean? It seems to me that what characterises scientific study from what I might call 'unscientific' study is that it is devoted primarily to the analysis and investigation of the material concerned in a search for features of order or of regularity therein, that is, to the uncovering or the establishment of organization and patterning in that material. There is a further process - the classification of the analysed material to display the patterns so arrived at, but this is a subsequent operation, even though there may well be a sort of 'feed-back' from the display attempts, a feed-back which suggests new features of order in the material.

The procedure which the scientist adopts is basically one of generalization and hypothesis with regard to the material: that is, he creates ideas or hypotheses as to the nature of the features of order and patterning which may exist within the material, and subsequently tests these hypotheses by applying them to the material. Scientists themselves frequently believe that their progress depends on analysis and classification of the material and a quasi-logical extrapolation of it, but in practice advance in a science is now held to come primarily from those guesses or hunches or intuitions with regard to the material, which we have here called hypotheses.

The safeguards erected by scientists for science are basically of two types. The first is that of publication: the scientist publishes his hypotheses and the results of his testing so that they are available, in theory at least, to all other scientists who are interested in the same mass of material. The second safeguard is repetition: published accounts of scientific work are ideally in such form that the work may be repeated by other scientists as a check upon its validity.

The evaluation of a hypothesis is based first on the usefulness or convenience of that hypothesis with regard to the purpose of the investigation within the particular science concerned and secondly on such general scientific criteria as scope or generality, simplicity, and elegance.

To turn now to language. The material with which the linguist deals is language in general and languages in particular. A language is a method of communication and co-operation among the members of a human community by means of a system of conventional vocal symbols. Observe

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that in this definition, language is clearly conceived as a possession of the community. A language is a system which is, in a very clear sense, available to all the members of a community, but is not possessed in its entirety by any single one of them. The speaker in his speaking makes reference to the system of the language and the hearer refers what he hears to the same system and the correspondence of the features referred to in the system constitutes the communication between the two. Speech, then, is the individual's using of the system of language. It is concrete and real in the sense that what is spoken exists in the world of energy, time and space. Language, on the other hand, is an abstract system which exists in the minds of and by virtue of the speakers as a community but is nevertheless, in a very clear sense, superordinate to them as individuals.

Language is primarily a system of symbols. It is the symbol upon which all language depends. A symbol is a structure of two parts; one part consists of a perceptible entity, something which can be perceived by one or other of the modes of the human sensory apparatus. In language, the material from which this part of the symbol is constructed is sound and the stretch of sound from which a symbol is composed is known as its form. The other part of the symbol is an idea, a concept, a segment of experience: in linguistics this is the meaning. The two parts of the symbol, the form and the meaning, are linked by a relationship of association which enables either of these, if occurring in consciousness, to call up the other. This relationship of association is a purely conventional and arbitrary one, which must be learned separately for each symbol during the course of apprenticeship to the language.

Since the study of language must focus on the symbol, we might expect two major branches of linguistics; in fact, however, that branch which concerns itself with the form of the symbol is itself divided into two sections. The form of the linguistic symbol shows a dual patterning, and each of these patterns is the province of a separate branch of linguistics. The whole of the study of language thus consists of three branches - two parts concerned with the form of the symbol and one part with the meaning.

The first branch is the study of form at the lower level. This branch is named phonology. The subject matter of this branch is the sounds, stresses and pitches in which the forms of language are manifested by the processes of articulation. It also includes the significant units at this level, the phonemes and the prosodies. These units bear significance by their opposition to one another - |p| is not |b| is not |f| etc. - and it is this function of being different which renders them significant units of form as far as the whole language is concerned. They do not, as phonemes or prosodies, carry meaning.

The second branch of linguistics is that which deals with form at the higher level where meaning is involved; this branch is termed grammar. The forms at this level are patterned sequences of phonemes and prosodies which are associated with meaning. The units here are morphemes, the minimum meaningful forms of the language, words, the minimum sentence-forming units, and the constructions, the more complex meaningful units of the language. Grammar is itself frequently subdivided into the two sections of morphology which deals with the simpler meaningful units, the

morphemes, words, and syntax which deals with the ways in which these units are put together to form more complex units.

The third branch of language is the study of meaning: this is semantics, the branch in which linguistics has made least progress. The difficulties are mainly those which are apparently inherent in the study of meaning and which have bedevilled philosophy and metaphysics from the beginning of human inquiry. The meanings which are associated with the forms of the language are concepts, ideas, relations and such like, which are derived from the experience of the community, either directly or indirectly, and in an abstract or generalised form associated with the forms. Strictly speaking, the meaning which each member of a speech community associates with each form or construction derives from his own individual experience and hence is unique and individual to him alone, but language as a system of communication can operate only as a result of a contract social, a general convergence and agreement among the members of that community with regard to the meaning which they associate with each of the forms. As far as language is concerned, then, the meaning of a particular form is a sort of highest common factor of the individual meanings associated with that form by each of the users of the language.

The study of language is one of respectable antiquity and yet it does not date, as far as we know, from anything like the period of the beginning or the origin of language. Recent work in the study of human evolution suggests that human or human-like men have been constructing tools, and hence (we assume) speaking, for a very large proportion of the last million years, but the beginning of the study of human language seems hardly to be older than a few thousand years. In the first millenium B.C., in three separate areas, South-eastern Europe, India, and China, separate peoples independently seem to have reached that stage of critical detachment at which they were able to take an interest in the nature and function of language. In the West, from Greek times, through the Roman grammarians, the early Fathers of the Church, and the scholastic philosophers of the medieval period, the study of language was kept alive. In the later Middle Ages it formed an integral part of the studies of the newly developing universities. With the Renaissance and world exploration came new intellectual interests in the nature and role of language and a wider range of languages for investigation, but it was not until near the end of the eighteenth century that reasoned and objective study began to replace what seems to us today interesting, but very largely subjective, speculation with regard to the nature and origin of language.

The modern study of language dates from the very end of the eighteenth century and its florescence in the nineteenth century must be regarded as one of the great triumphs of the human mind. The realization of the relatedness of languages, and of development and change in languages through time was a remarkable achievement and quite fit to rank in the humanities alongside the Darwinian concept of evolution in the biological sciences. In the twentieth century, the emphasis in linguistics has shifted from the historical to the descriptive. It has been realised that progress in the understanding, the nature and the functioning of language and in the understanding of its evolution and history is dependent upon improvement in the accuracy, precision and completeness of our methods of describing language.

From the study of many languages both as they appear at points in time and as they have developed over long periods of their known or inferred history, the linguist has come to two main conclusions. The first is that language is an orderly and organised phenomenon. The concept of language as a system is basic to modern linguistics. A language does not consist of an aggregation of words, or of strings of units in use, but of a complex of integrated and interlocking systems, and each part of a system holds its position by virtue of its contrast with every other part. Language is a system of oppositions, as it has been said, and these oppositions are amenable to scientific study and to objective description.

The second main conclusion is that languages may be related and these relationships are of different types. The first type of relationship is typological, that is, related to the structural system or type of the language. For example, two languages may show similarities with regard to corresponding features of one or more systems. As a simple example, we note that the syllable structure in Maori of New Zealand and in Yoruba of West Africa is very similar: the syllable consists of either a vowel or of a single consonant followed by a vowel, no clusters of consonants occur initially in the syllable and no consonants occur at the end of the syllable. A second example, at the grammatical level, is the similarity between Latin and Turkish in the case system of the noun. In both these languages, the noun has six cases, five of them closely corresponding with regard to their functional significance within their own grammatical systems. Relationships of this nature are said to be typological.

The second type of relationship between languages is with the linguists have come to call by the rather unfortunate term genetic; that is, related as to origin. Two languages are said to be in genetic relationship if they have ever been one and the same language; thus, the English language of the twentieth century and the English language of the tenth century are in genetic relationship. French and Spanish of today are also genetically related, both being modern developments or descendants of the same language, Latin, and Icelandic and Bengali likewise, being developments from Indo-European. In the same way, Hebrew, Arabic, Amharic and Hausa have been shown to be genetically related, as developments from a proto-Semitic language; Twi of West Africa, Zulu of South Africa, and Swahili of East Africa are genetically related descendants of a proto-Bantu ancestor and so on.

The third type of relationship between language is a relationship derived from contact and inter-influencing. Whenever speakers of two languages, or even of two forms of one language, come into contact with one another, a bridge is opened for borrowing from one to the other. Few languages in human history have existed for a long period in complete isolation, and most languages bear the marks of contact with others. In some, such marks are but traces, as in a few words such as boomerang, corroboree; English reveals its contact with the autochthonous languages of Australia; in others the borrowing and influencing has been extensive and long-continued, as in Albanian, in which the borrowings from Greek, Romance and Slavonic have almost swamped the native words in the vocabulary. A further interesting reflection of this type of relationship, a type of semantic borrowing, is found in Europe in the widespread occurrence of forms of similar meaning as a farewell: "Au revoir", "A rivederci", "Auf wiedersehen", "Vizontlátásra".

The Tasks of Linguistics: The first task of linguistics is a simple one; it is to record and describe the languages of the world and in so doing to develop and test improved methods and techniques of such description. It is today clear to the linguist that the continued development of the understanding of the nature and functioning of language is dependent upon improvement of methods of describing the material of this science.

The second task of linguistics is the expanding and deepening of our understanding of language. We can usefully divide this into two parts. In the first place, the linguist is concerned with what language is as language, what its nature is, what its units and systems are and what the relations between these are, how it functions and how it develops and what the relations between languages are. In the second place, he is concerned with language and the rest of human life and culture, and how language affects and is affected by other aspects of human activity. Language impinges on and penetrates all human thinking, all human doing and all human activity, and the linguist's interest in and study of language in this role will depend upon co-operation and assistance from a large range of specialists.

Consider briefly some of the important aspects. Language is in an important sense a vocal phenomenon produced by activity of the human nervous system and the human vocal apparatus. For the understanding of this aspect of language, the linguist requires the co-operation of the anatomist, the physiologist and the neurologist. Then, processed into speech, language emerges from the speaker in the form of information-bearing sound-wave signals, and for the study of these the linguist must rely on the help of the acoustician, physicist, mathematician and communications engineer. Again, language is a complex series of activities in the brain, of perception and of thinking, and for the understanding of this aspect the co-operation of the psychologist and the philosopher is necessary. Language is also something which the individual acquires during the period of his growth and development; it is part of the process of socialisation and of the development of his personality, and for the understanding of language in this aspect, the linguist requires assistance from the pediatrician, the child psychologist, the educationist and the social psychologist. And, further, since the course of this development is not always untroubled, we may need to call on the speech pathologist, the logopaedist, the speech therapist and in extreme cases even the psycho-analyst, for their contribution to the understanding of language.

Language is also a social phenomenon. It is indeed the main means by which the interaction of human beings and hence human society, as we understand it, are rendered possible. A language is the chief medium in which a community stores the knowledge which it has of itself, its history, and its environment, and the medium by which a community transmits its knowledge and wisdom from generation to generation. Language is also the primary means by which peoples interact with peoples, and by which ideas are conveyed from society to society - we need only think of the Renaissance in Europe in the sixteenth century or the impact of the West on African cultures in the twentieth century - with results that have changed and are changing the world as we know it. For the study of this aspect of language, we must call on the historian, geographer, anthropologist, sociologist, and ethnographer.

Thirdly, but of equal importance, language is also a biological

phenomenon. It is the most characteristic property of our species, that property which separates us most clearly from all other living things and that property which more than any other makes us human. It is a property, however, which is based on and depends on bodily structures and bodily processes which are transmitted from generation to generation by the mechanism of heredity. As a property of a biological species, it has been exposed through millennia, indeed through the course of all human history, to the influence of natural selection: we need have little doubt that a great deal of the perfection of our present-day languages is due to evolutionary advantages which improvement in language and language ability bestowed on certain humanoid and human groups in the struggle for existence within a specific evolutionary niche. For the study of this aspect of language, we must call on the biologist, the geneticist and the evolutionist.

This does not exhaust the list of aspects of language. Language is also the medium of professional use of the writer, the journalist, the poet, the statesman, the demagogue, the advertising man, the public relations officer; and it is a medium of daily use to all of us within human society. Some of the linguistic understanding of language drives and will continue to derive from the use of the ordinary user. In short, linguistics is that branch of human activity which is concerned with the study of language as the most overtly and characteristically human property, as the indispensable basis of human life and culture as we know it, and with the study of languages as the differing and changing manifestation of this property; but the manifold nature of the object of its study is such that linguistics needs and acknowledges its need for the co-operation and assistance of a wide range of scholars, scientists and users.

Section III suggests that the theory and practice of linguistics should be based on a scientific approach to the study of language.

A grammatical description of a language is a description of the sentences in that language which are possible in certain defined ways. "predicator", etc. are all descriptive categories and their relations to each other in the general theory of grammar.

Four kinds of descriptive categories are needed to account for all the grammatical features of a particular natural language. They are class, structure, unit and system. I shall restrict myself to a brief and partial description of the categories of class, structure and unit.

Units are stretches of language that carry patterns. Units in all to account for the kinds of pattern that are carried by different stretches. These are the units: sentence, clause, group, word and morpheme. The units are related rigorously to one another in fixed relations. The relations are fixed so that sentences consist of clauses, clauses of groups, and so on down to the smallest unit of the morpheme. This paper will be mainly concerned with the ranks of sentence, clause and group.

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