

# LANGUAGE

## A MODERN SYNTHESIS

*By*

JOSHUA WHATMOUGH

*Professor of Comparative Philology  
in Harvard University*

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## PREFACE

THIS book is directed at the interest, and it is great, of intelligent people, and they are many, in one or more of the several aspects of language; not at the experts in any of these aspects (or in any particular language), who may well be critical of the treatment of their specialties. It makes no claim to originality except in my theory of Selective Variation; it aims to bring together in a new synthesis current views about language developed in many different fields of knowledge. But it may be observed here that every new step that is taken in communication theory and in its practical applications—and such steps are now being taken fast and surely one after another—demonstrates that communication theory does correspond very neatly to language as well as to what is commonly called ‘thought’, and that it is neither mistaken nor too enthusiastic to transfer that mathematical theory to language. But of all this and of Selective Variation (a theory which I formed in 1941, and first mentioned in print in 1948, see *Actes du sixième Congrès international des Linguistes*, Paris, Juillet 1948, p. 348, a paper written in 1946) only time will tell; and I venture to hope it will not be so long a time as was needed for the acceptance of the theory of evolution. As to the possible objections that ‘information’ is defined in terms of probabilities, so also is language (p. 258); or that the Boltzmann theorem applies to a message, and not to a message-source, observe that in my account of  $H$  (of the Boltzmann formula), I do apply it to linguistic acts, that is to utterances or acts of speech (*la parole*), and not to the abstraction LANGUAGE (*la langue*); and, finally, observe that full weight is given to redundancy. It may be said that the electric impulses of telephone, television, and radio, are not the same as linguistic acts; but these are all freely convertible from one to another, and back again. Moreover, it seems also that cerebral impulses are electric (or electronic); in fact, by a curious inversion, computators are popularly called ‘electric brains’ (or ‘electronic brains’), when actually the human brain is an

electronic computator, if not a very good one for some operations (e.g. high-speed calculation), but an excellent one for others (e.g. the composition of poetry, or every day talk).

If I mistake not, in recent times the initiative was taken in the Harvard doctoral dissertation *Relative Frequency as a Determinant of Phonetic Change* (the important words are, of course, 'relative frequency' and 'determinant'), see *Harvard Studies in Classical Philology* volume xl, 1929, p.1), the title of which stressed my idea (see the footnote on p.3, *ibid.*) of the evolutionary significance of the undertaking, although the author of the dissertation while accepting, as he in fact did, was always more interested in his method (this, I feel sure, was his idea, and he deserves full credit for it) as a descriptive technique, and for its psychological implications, something to which he was passionately devoted. A century ago, as I now learn from George Boole's *Laws of Thought* (London, 1854, p.245) the method had been used by the Rev. Charles Graves, Professor of Mathematics in Trinity College, Dublin, in discovering the key to Ogam, and was applied by Edward Hincks to deciphering cuneiform. Graves verified his principle by constructing sequences table for 'all the European languages'. Again, if I mistake not, linguists have been quite unaware of this anticipation of statistical methods in linguistics. But I could never feel sure that my ideas of 1927-1929, when that Harvard dissertation was being written, and being discussed with me almost daily, that I could prove my merely intuitive theory; that conviction was borne in upon me as I heard a talk given in 1950 by Professor Robert M. Fano of the Massachusetts Institute of Technology before the Institute for the Unity of Science, and then, almost at once, read Shannon's papers (also put out in book form) on the mathematical theory of communication.

Some matters, which had to be omitted from this book are developed in my forthcoming Sather Lectures of 1955 on *Poetic, Scientific, and other Forms of Discourse* (University of California Press, Berkeley and Los Angeles, 1956), especially an attempt to put the 'qualitative' aspects of literary discourse (barely mentioned on p. 210 below) on a scientific footing.

This book owes much to my own observations and reflection; but like many books, it owes much also to others who have written in these fields, and to discussions with colleagues and

friends, the experts, and—most of all—with some, namely the best, of my students, past or present, who have constantly led me to new, and, I hope, better efforts to wrestle with our common problems. I have read everything that I could lay my hands on that seemed to be pertinent; and I have drawn freely on stock examples familiar to all linguists, both from standard works and from articles in periodicals, especially *Word* and *Language*, but also some others, English and European. To Dr D. M. Mackay I am indebted for the brilliant concept of meaning as ‘goal-directed activity’; and I have at times paraphrased my authorities, without, I hope, misrepresenting them. I am in the debt also of alert and thoughtful readers of the press; but most of all in the United States scholars owe much to enterprising men of business, and this book owes its very existence to the interest of one of these, for it owes to him the stimulus that at last impelled me to put these twelve chapters down on paper, an interest my thankfulness for which I can hardly express adequately. Dr Lawrence G. Jones, Dr Anthony G. Oettinger, and Mr Thomas D. Houchin, all of Harvard, and my wife, have read proofs, in whole or in part, and saved me from some errors.

Finally, the repeated use of one and the same example, notably that of temperature and of words meaning ‘hot’ or ‘cold’, may, I hope, serve as a clue to a single thread of argument that runs through this book.

J. Wh.

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Cambridge, Massachusetts

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THE following works have been useful to me:

- Bloch, B., and Trager, G., *Outline of Linguistic Analysis*, 1942  
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- Ullmann, S., *Précis de Semantique Française*, 1952
- Wellek, R., and Warren, A., *Theory of Literature*, 1949
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Others that have become available, or came to my notice since this book was written in the winter of 1953 to 1954, will be considered in my forthcoming Sather Lectures; and in a book upon which I am now engaged (to be called *Language the Measure of Man*), in which also far more attention is paid to indeterminacy (cf. pp. 178, 203 below), especially in literary discourse.

I have profited greatly from the monographs of R. M. Fano, R. Jakobson, M. Joos, W. H. Huggins, and W. F. Twaddell; and from numerous articles, for offprints of which I am indebted in many cases to their authors, in particular W. E. Bull, Y. Bar-Hillel, J. B. Carroll, S. H. Chang, E. C. Cherry, C. D. Chrétien, N. Chomsky, P. Delattre, M. W. Essigman, H. Frei, C. H. Fries, T. Griggs, A. W. de Groot, R. A. Hall Jr., M. Hallé, E. P. Hamp, A. A. Hill, L. J. Hjelmslev, W. H. Huggins, S. Johansen, L. G. Jones, C. Kluckhohn, M. Kurath, R. H. Lees, J. C. R. Licklider, J. Lotz, R. I. McDavid, B. Mandelbrot, A. Martinet, V. Mathesius, C. N. Mooers, A. G. Oettinger, E. Pulgram, D. W. Reed, E. Reiffner, F. M. Rogers, P. J. Rulon, H. Spang-Hansen, H. L. Smith Jr., C. P. Smith, A. Stender-Pedersen, H. L. Stubbs, M. Swadesh, L. C. Tihany, G. L. Trager, W. F. Twaddell, R. Wells, R. Valin, F. Vilbig, J. P. Vinay, C. F. Voegelin, B. L. Whorf; and to papers written by a number of former or present students of mine, especially R. Abernathy, Mrs C. Chomsky, Miss F. M. Chude, R. J. Funke, Miss M. A. Handy, Miss M. Hill, E. H. Lenneberg, W. J. W. Lewis, W. F. Mackey, D. S. Marshall, L. E. Opdycke, H. A. Roe; as well as to articles in periodicals too numerous to name, but familiar to most linguists, the scope of which runs the entire gamut from the *Journal of the American Acoustical Society* to the *Modern Language Review* or the *Travaux du Cercle Linguistique de Copenhague*—both in subject matter and in spanning work done in two hemispheres.

# CONTENTS

CHAPTER	PAGE
PREFACE	v
ACKNOWLEDGEMENTS	vii
INTRODUCTION	I
I SCOPE AND METHOD	5
II LANGUAGES IN HISTORY	18
III LANGUAGES IN THE PRESENT	35
IV BILINGUAL, MULTILINGUAL, AND INTERLINGUAL COMMUNICATION	51
V WORDS AND MEANINGS	66
VI THE USES OF LANGUAGE	86
VII THE STRUCTURE OF LANGUAGE	108
VIII THE ANALYSIS OF LANGUAGE	127
IX THE NEURAL BASIS OF LANGUAGE	149
X LANGUAGE: SOCIETY, INDIVIDUAL, AND SYMBOL	181
XI MATHEMATICS, STATISTICS, AND LINGUISTICS: THE MECHANICS OF LANGUAGE	199
XII LANGUAGE AND LIFE	221
APPENDICES	241
GLOSSARY	259
INDEX	265

## INTRODUCTION

THE study of language is of great antiquity. In the nineteenth century it participated in the evolutionary views then prevalent, and the result was the great achievement of historical and comparative linguistics, a methodology which was to language what the telescope had been to astronomy. Many valuable generalizations resulted, particularly the principle of regularity in change of sound; but attention was focused chiefly on the Indo-European languages as such, and on the details of their history, which were thoroughly explored. No general theory of language was sought except by a few individualists, whose scepticism prepared the way for the analytical method of the present century, a method stimulated also by the necessity of recording and describing native languages outside the Indo-European, Semitic, and other groups of languages which had long literary traditions and long traditions of exegesis. At the same time a new philosophical interest in language grew up, particularly that which regarded language as one of a few fundamental sets of symbolic forms. The question of functional relationships has thus become as prominent as that of historical connexions. In this field, still less than forty years old, international co-operation, which has fostered the development of all modern sciences, has been difficult and at times impossible for the new science of general linguistics, as a consequence of two world wars; but some solid results have accrued and some fundamental doctrines have been established; quite recently linguistics has been recognized as worthy of a place with the other subjects that are being actively pursued as contributing to the movement for the unity of science. Most striking of all is the still more recent application of symbolic logic and mathematics to linguistic problems, thus bringing linguistics into still closer relation with the exact sciences. Above all it has suddenly become clear that language seems to be orderly in its processes—far more orderly than had been supposed—and actually to be governed historically by pre-existing order of its own that constantly maintains and

renews itself. In contrast, living organisms tend to go over into disorder, 'to approach the dangerous state of maximum entropy, which is death' (Schroedinger). Linguistic events, which are the conscious correlatives of cerebral activity, on the other hand, are statistically determined.

Take an example of a brief linguistic event. My boyhood was passed in the north of England, and the first general election that I remember was that of 1906, a Liberal landslide. My father was an ardent Liberal, and when he came home from a gathering of several thousand voters to whom the election results had been proclaimed in the Town Hall Square shortly after midnight of election day, my mother asked him 'Were there mony theer?' and he said 'Nobbut a tuthry'. This we all understood: 'Only two or three.' This also we all understood—a good crowd. The Lancashireman, like the New Englander, is fond of understatement. 'Three' is plural, that is more than two, which is dual number. So in common law, three is a crowd and may be moved on, as being likely to create a disturbance, by the police, without a warrant and without waiting for the Riot Act to be read. The old nursery rhyme has it 'One's none, two's some, three's a many, four's a little hundred'. In Tierra del Fuego, before the white man arrived, counting did not go beyond three. 'Where two or three are gathered together' (Matt. 18.20) the time is ripe for testimony; testimony of a different kind, to convict a murderer, called for two or three witnesses (Deut. 17.6; Numb. 35.30).

A man's will, to be valid, must have a witness or witnesses, that is, a third party—namely in addition to the testator himself and the beneficiary. That is what makes it his testament, an instrument that has a witness, in Latin *testis*. (The other meaning of *testis* is secondary: testicle, or a witness to virility.) But *testis* comes from old Latin *ter-stis* and this from *tri-stis* which meant 'third (person)', that is the witness, 'standing by' (Latin *stare*, from the same root as English *stand*). When he testifies, he says what he has *seen* done, the seal and signature of the testator—not hearsay; but 'see-say', and *see* and *say* also come from the one and the same root, for to 'say' is to make someone else to 'see' vicariously that which you have 'seen'. In a Greek tragedy three actors are enough to present the whole drama of life.

There is magic in the spoken word. It was because 'God said' let this and that be done, that it was done; or in the New Testament: 'In the beginning was the word.' The early Keltic peoples had a god of language called Ogmius (*ogam* being the name of their most ancient alphabet) who was identified with Hermes, the Greek god of speech; so had the Romans, a shadowy divinity called Aius Locutius (*aio* 'I say', *loquor* 'I speak'), 'sayer-speaker' (a doubled assertion, like the Chinese 'look-see'), the people of India a goddess Vagdevi (*vak*- 'word', cognate with Latin *vox*, and *devi* 'goddess' cognate with Latin *dea*), the ancient Egyptians a god Thoth (better Tehuti), and the Chinese a sacred turtle, who gave the gift of writing. In Homer writing is fraught with peril (σήματα λυγρὰ), and spoken words are winged (ἔπεα πτερόεντα)—either wing-swift, or, like a feather-tipped arrow, they reach their aim. A ban may be placed on writing, so that the sacred books of the Hindoo or the Moslem still are, and of the Gauls were, handed down by word of mouth; outside the sacred circle their contents might not be revealed even by word of mouth, so that silence becomes a golden virtue. The proper word is an open sesame; but the sacred name of God must not be spoken. My father addressed my mother by name when he was dying—he had always called her 'missis' both in addressing her and in referring to her, until that last half-hour. The mention of a person's name is felt somehow to weaken his defences against the outside world; the freedom with which given names are used in North America perhaps means that the old superstition is dead there. But the magic of language is not: a child can mobilize strong feelings with a word or two, a politician stir up pandemonium: *nobbut a tuthry!*

The phrase itself contains only two or three words. But those two or three give a glimpse of dialect compared with standard usage, of language at work, of change in language, in sound and in meaning, of language as an emotional outlet, of language and the law, language and religion.

An American learning to speak Arabic by the direct or conversational method once answered the question 'Where do you come from?' by saying *Iowa*, and the instructor told him that 'yes' could not be the answer to that question, the Arabic for 'yes' being *aiwa*. So the meaning of a word is not the sound of it, which may be more or less the same in different languages

with totally different meanings. Or the same meaning may be given by totally different sounds: *horse, pferd, cheval, misatim; house, casa, maison, domus*. But *bill* may be an account rendered, a piece of money, a boy's name, and a metal implement. How are such things sorted out and kept distinct? Or pairs like *it swings : its wings*, or French *un invalide : un·nain valide*? Multiply the questions many times in every language:

Alas, it's not the cares of State  
That prematurely age the great,  
It's angry pens a-gleaming at them  
And someone always screaming at them.

The parting injunctions  
Of mothers and wives,  
Are one of those functions  
That poison their lives.

The earth is used to bores,  
It heard, through ages long,  
The saurian's complacent roars,  
And the halting birth of song.

Our restless tongues—their lust  
For action never dies.  
The noisiness of living dust  
Astonishes the skies.

It also astonishes anyone who stops to think for a moment of the miracle as well as the magic of language. During the last quarter of a century new methods of observation, new lines of attack, new collections of evidence, have combined to put the story of language in a new setting. The pages that follow tell this old story in a new way.

# I

## SCOPE AND METHOD

NEARLY everybody talks, many can read and write, and some listen. Language is the most important meeting ground of the sciences and of letters. An age in which words play a greater role than any that has gone before calls for an examination and interpretation of linguistic processes—for language about language—to the end of better understanding and mastery of itself. Both the act of speaking or writing and the act of memory are events. But they are not random. They have, as we say, meaning; they are activities directed towards a goal, or goals, achieved if at all by their own mediation, so that understanding becomes a function of grammar. Modern computators demonstrate this peculiar feature of language in a peculiarly vivid way. But the verbal behaviour of human beings has a self-starter and controls its own output—the stream of speech in which the successive words and sentences follow one another without premeditation. Moreover these remarkable feats are performed in such a way as to produce very extensive results with the help of materials of quite limited range. Thus it has been found that command of the 3000 most frequent words in a continuous sample of 100,000 running English words gives an understanding of 95 per cent of all the words, and that 2 per cent more can be acquired by derivation from these; but that a further 1 per cent increase can be attained only by the addition of 6000 additional words. Such statistical evidence raises a number of interesting problems.

How, for example, is meaning in different kinds of discourse related to the resources and structure of a language? And how is such a structure formed? We have modern 'information' theory of communication engineers, which is at least as much concerned with conformation as with 'information' (that is, with

a measure of the restriction which habit, or structure, imposes on freedom of choice). But not all language is informative in the ordinary sense either. So much of language is emotive as to inspire distrust, even in much of that part of it which purports to be informative. Moreover, in languages with a great literary tradition, far more than mere structure is of compelling interest. On the other hand, it has been maintained that even in languages devoid of such a literature, say of the Hopi or Shoshoni or Navaho, everything is really in the structure, in the form, of the language—that its way of saying things or mere grammar gives us the speaker's view of the universe, as contrasted with the totally different way in which scientific discourse says the same things, for example the causes of rain. Can this be true? Again scientific discourse transcends, from its own point of view, both a vernacular, devoid of the tradition of literature other than folk-tales orally transmitted, and also the literatures of the so-called 'great' languages. How far has scientific discourse its own peculiar structure, and why cannot it get on with ordinary discourse? What are the operative functional units to be isolated in the structure of a language? Or the operative units of meaning? Are these identical in one and the same language, or in more than one language, in all languages? Are there any items that are universal? Is there any language that comprehends, or seeks to comprehend, the world, and what then is its structure? Does the structure of the one correspond to the structure of the other, so that syntax is a model of the universe? Or must there always be a selection of units of meaning as well as of units of form? In Neanderthal society just how much was there to talk about? What, if any, are the limits to the variety of things to be talked about, and to human capacity to talk about them? Is knowledge itself coextensive with language? Or can anything be known that cannot be said? Does the emergence of an abundance of grammatical forms, as in early Indo-European languages, the age of inflexion, represent a suddenly widened understanding, which was making unprecedented efforts to cope with previously guessed at, but very involved relationships, which their modern representatives now face with simpler linguistic devices? And the almost complete absence of variety in grammatical forms, helped out by ample gesture to indicate even fairly simple relationships, as in the

Aranta of Australia, does this represent a feral stage in which not much is found to talk about? May 'thought' be not merely sub-linguistic, but also non-linguistic, or both? What is the relationship between a language and a culture? Does language mould or reflect the culture, or do they react each constantly upon the other? What about those words, in Lewis Carroll or Edward Lear, which might have been structurally valid in English, but never occur elsewhere? Or the orders of words, in a poet like Hopkins or prose writer like Joyce, which are not structurally valid in English at all? These are some of the endless questions that present themselves.

This book is about language. Normally, all men and women, except idiots and, unless they are carefully trained, except deaf-mutes, join in this human babel before getting out of baby-clothes; and there is nothing comes their way that they will not talk about. Language touches everything, human and in-human, in heaven and on earth, and beneath the earth, language itself included. Language about language is called linguistics, a vast and highly technical subject, yet only a very small part of language. Since this book is about language, some attention must be given to linguistics. But the book is not solely or primarily about linguistics, but (to repeat) about language. Not everything, however, can be got into one book, and the subject-matter of this one must be selected; even the aspects of the subject-matter must be selected, and also what is to be said about each of them. The criterion of selection will be interest and importance, not technical detail or exhaustiveness.

What is language? It is customary to begin with definitions. But philosophically a definition comes at the end of an investigation. If we begin by defining language, that is because language has been investigated from more than one point of view already. We might indeed be clear first about the nature of a definition. To define is to set forth the proper or peculiar qualities of an object, the features that give it its character and quality. But to define is also to differentiate an object, to set forth the features that distinguish it from other objects with which it might be confused. Again a definition is not bound to be permanent, but may be changed. The ancients regarded vinegar as typical of acid substances, but vinegar is impure acetic acid; acetic acid (the acid of vinegar) in modern chemistry

is  $\text{HC}_2\text{H}_3\text{O}_2$ , of which only one of the hydrogen (H) atoms has acid properties—an acid being a salt of hydrogen, in the language of chemistry a substance which gives a hydrogen ion in solution, or which neutralizes bases yielding water. In general, an acid is 'a molecule with a positive field which is capable of neutralizing a basic molecule having a "free" electron pair'. In ordinary conversation, of course, the term 'acid' is not restricted by the scientific definition.

Now, to define language with precision is far less easy than to define acid or other chemical terms. This is because many scientific inquirers are interested in language, philosophers, psychologists, physicists, logicians, literary critics, neurologists, sociologists, as well as linguists, to name no others. There is also, just now widespread interest in language and in meaning on the part of many intelligent men and women, no matter whether they regard an understanding of the nature and function of language as directly important for their daily work or not. No wonder, then, if many different definitions are made by different thinkers. But there need not be one, and only one, definition of language; and the different definitions advanced are not exclusive. They bring out different aspects of language, and supplement one another instead of excluding one another. Everything depends on the investigator's point of view and interest at the time that he makes his definition.

To many, language is the most important form of human communication, and this is the broadest way of regarding it. Certainly language is human, and human only. Insects, birds, and some mammals as well as man do communicate; but they do not talk. And language is normally, though not invariably, a form and a means of communication. Humans also use other means of communication, such as a red light, or a flag; but these are interpreted in language. 'Communication' means that an organism is affected by an external event and makes a reply to it. Clearly both the reply and the original event, in many cases itself also an utterance, are quite commonly what we understand by language: 'Is it raining?' (utterance) 'Not much' (response).

To others, language is first and foremost a form of symbolism. Here again we must stop to ask a question. What is a symbol? A symbol is a surrogate. We speak of mathematical symbols,

for example  $x$  for any number,  $x^n$  for any number multiplied by itself any other number of times, i.e.  $x^n$  is the continued product of  $y$   $x$ 's, or  $x$  multiplied by itself  $(y - 1)$  times;  $\Sigma$  for any sum, and so on; or logical symbols, as  $a$  or  $b$  as variables in a statement or proposition, and then  $\bar{a}$  to mean 'not  $a$ ',  $a \vee b$  for ' $a$  or  $b$ ',  $\supset$  for implication as  $a \supset b$  to mean ' $a$  implies  $b$ ', and so forth. But all these surrogates have one feature in common. There is nothing in the nature of things that gives them the meanings stated; that is something *we* have given them, by agreement or convention, so that the symbol acquires a certain arbitrary character. This is something quite different from a *sign*. A sign has a direct relation to its object, like water dripping from the trees as a sign of rain; but the *word* rain (which obviously is not rain, or a sign of rain, for I can say it indoors, or for that matter I can say it repeatedly, even outdoors, without getting wet) is a symbol of 'rain' or 'raining', as in our question *Is it raining?* *Not much!* or (to vary the event and therefore the response) *Not at all!*

Moreover, any consistent or coherent group of symbols, as in a language or dialect, is *systematic*. Like a family or society, it is not a merely accidental collection of stray individuals. The nature of symbols is such that to speak of an unsystematic symbolism is to fall into a contradiction in terms. Certainly linguistic symbols which are combined in such a way that the ties between them are unsystematic or are even bizarre—that is linguistic symbols unrelated to one another but merely juxtaposed—make nonsense; they cease to function as symbols. A haphazard jumble of symbols, say a pied text, is a mathematician's, or musician's, or a mere writer's or talker's nightmare—but still a nightmare. An isolated symbol, on the other hand, remains just that to all eternity. The symbol for implication implies nothing by itself but implication in the abstract, and there it must rest; probability is probability in relation to something. All higher order abstractions are symbolic—'justice', 'freedom', 'goodness', 'truth' and the like. Neither their content nor their form is directly or independently experienced, but only in relation to that which they symbolize; which is the reason why they are so much either distrusted or blindly worshipped, like the ideal of autonomy which destroyed the ancient Greek city-states.

But there remains one other factor even in this definition of language. Language is not only a systematic symbolism. Music is that, and also like language uses sound, and at times, as in singing, combines its own rhythm and melody with language. Language is a *verbal* systematic symbolism. That is to say, it makes use of verbal elements and structures, in brief of what we commonly call words and of their arrangements. It will be better to postpone for a while any definition of words, or of what, in some languages such as Eskimo, behave pretty much as words do in others such as English. For the present it will be enough to take an example, say 'table'. There we have a symbol of a certain object; the symbol is also a word; that is, it is a verbal symbol. So, in like manner, *and* or *beer* or *have* or *embryo* or *drunk* or *man*. Now when we have occasion to use such a verbal symbol, we do so in a systematic way. Thus the verbal symbols 'table and embryo have drunk beer,' placed in that sequence are so unsystematic in arrangement as to symbolize nothing, unless possibly dementia on the speaker's part; but 'the man has drunk beer,' by adhering to the system, retains the symbolic integrity of each symbol, and the arrangement enhances their symbolic values.

The same is true at each step; *table* is a symbol, *letab* is not. It is not even necessary to add that *elbat* or *letab* is not a symbol in English, implying that it is, or may be, in some other language. What we have said so far is true of languages, or of a language, as well as of language at large; for every case is a given case when you come to it, and this is true of languages as of everything else, from cabbages to kings. To raise the question of system or no-system of a symbol outside its own systematic symbolism is idle. How deep-seated this principle is may be seen by taking the following groups of Latin words:

*saxum* 'stone' but *sexum* (acc. sing.) 'sex', and *sex* 'six'

*lacus* 'lake' but *locus* 'place'

*liquens* 'clear' but *liquens* 'fluid', *loquens* 'speaking', and  
*liquans* 'liquefying'.

Lucretius, like all the ancient atomists, was aware of all this, and fond of it as an illustration of his theories: *ignis* is 'fire', which may be had from *lignum* 'firewood' by disturbing or subtracting from or adding to the constituent particles of the words