

Alfred Korzybski Memorial Lecture 1965

THE MODALITIES OF HUMAN COMMUNICATION

Henry Lee Smith, Jr.

Department of Anthropology, State University of New York at Buffalo

Address given 9 April 1965, The Harvard Club, New York

The term 'modality' may sound more than a little pretentious to some, particularly when I hasten to admit that 'means' or 'system' are terms that might have served as well. But since man's communication is of a unique kind, and since the principal means is a truly miraculous system of arbitrary vocal symbols permitting him to interact in a purely human way, I think a special term is appropriate. I have stressed the uniqueness and the humanness of the modality we call language; indeed, it is because man and man alone can talk that he is human, and though animals communicate, their communication differs from man's in kind, not just in degree.

It is convenient, even at the risk of oversimplification, to speak of the basic difference between animal and human communication by setting up a dichotomy between sign and symbol and to say that animals communicate through signs and human beings through symbols. Bird calls, animal cries, the high-pitched 'sonar beeps' of the dolphin - all these constitute what has been called a closed system of calls, and are what we mean by signs. When uttered, there is an immediate stimulus, say, the presence of food or of danger, and the communicative behavior is triggered at the level of a conditioned reflex. As the late, great anthropologist A. L. Kroeber put it, 'In function, signs that serve to communicate are action responses to sensory or visceral stimuli and are probably always accompanied by emotional effects. ... They alert one organism as to the condition of another, which is often useful. True symbols, however, can convey information in other matters than the condition of the communicating organism'.

A further delineation of the difference between sign and symbol is given by the American linguist Thomas Sebeok, who suggests the analogy between the analog and digital computer, stating that '... subhuman species communicate by signs that appear to be most of the time coded analogly', whereas 'in speech (contrary to the opinion of certain linguists) some information is coded analogly and other information is coded digitally. The digital mechanism of speech may, therefore, be regarded as a late development in the phylogenetic series and perhaps a uniquely human faculty'.

But Leslie White, one of the best known of cultural anthropologists, perhaps points up the difference in the most striking fashion. First he defines a symbol 'as a thing or event, an act or object, upon which meaning has been bestowed by human beings: holy water, a fetish, a ritual, a word'. He further distinguishes symbol from sign by pointing out that 'The meanings of symbols cannot be grasped and appreciated (comprehended) with the senses', and 'Symboling is trafficking in non-sensory meanings. But, be it repeated, no animal other than man can have, or be brought to, any comprehension of holy water or fetishes - or sin on Sunday'. On the other hand, 'A sign is a thing or event that indicates something else. There are two kinds of signs: (1) those whose meanings are inherent in themselves and their contexts (steam issuing from the radiator of an automobile, geese flying south, jaundiced eyeballs), and (2) those whose meanings are not inherent in their physical structures and situations (the green triangle that means food, the yellow quarantine flag)... The meanings of signs which are extrinsic to their physical forms become identified with their physical forms by means of the conditioned reflex. And, having become identified with their respective physical forms, these meanings can be comprehended and differentiated with the senses: the rat comprehends the meaning of the green triangle and distinguishes it from the red circle with his eyes'. He goes on to point out that the nature of a language like English forces us to talk about a sign and a symbol with the same means we use to talk about a cat or a dog. Thus, 'The fundamental distinction there is not between a sign and a symbol but between contexts, between

kinds of behavior, between "symboling" and "signing" (again the shortcomings of the English language). A thing or event, act or object is a symbol when it is significant in the context of symboling, i.e., originating and bestowing non-sensory meanings, and in comprehending such meanings. A thing or event is a sign when its meaning is either inherent in it and its context, or has become identified through experience with its physical form and, as a consequence of this, the meaning can be grasped and appreciated with the senses. The meanings of symbols can be comprehended but not perceived; in sign behavior perception and comprehension are congruent and inseparable'.

In suggesting the term symboling for this kind of behavior unique to our species, White sees this activity based in a 'unique neurological equipment' and further states, 'And because we symbol, we human beings can never experience the external, physical world precisely as non-human beings experience it'. In this connection he quotes Ernst Cassirer, who sees interposed between man's 'receptor' and 'effector' systems a 'symbolic system'. This new acquisition transforms the whole of human life. As compared with the other animals, man lives not merely in a broader reality; he lives... in a new dimension of reality...' Cassirer sees the unique possession by man of this symbolic system as constituting 'a new method of adapting himself to his environment'. Thus the symbolic system as the basis for man's unique adaptive mechanism can be identified with language and culture. White sees the study of human culture as the study of symbolates, a product of symboling. Such 'products of symboling are: acts (tipping one's hat), objects (holy water, arrow heads), concepts (sin, hot), and attitudes (loathing of milk)'. He sees that symbolates can be considered primarily in two contexts, somatic and extrasomatic. 'Symbolates (instances, or products of symboling) in a somatic context may be called human behavior, the scientific study of which is psychology. In an extrasomatic context, symbolates become culture, the scientific study of which is culturology'.

The American anthropologist, Homer Barnett, stresses the extrasomatic dimension of human culture and the relationship between culture, human interaction, and communication in the following words: 'The organization and perpetuation of culture is not dependent upon any person, but upon a complex interaction among many. The maintenance mechanisms are not within the individual; they are outside him in society. Consonant with this is a new view of the social contract as one whereby men agree to communicate, and of culture as the code by which they communicate'.

But culture itself, whether or not it is seen primarily as a series of communicative events, is totally dependent upon language, and culture truly constitutes man's unique adaptive mechanism. Cultures constitute structured, interrelated, coherent and systematic answers to the universal problems of human existence, and because man can talk, these common answers, these shared ways of thinking, acting and behaving, and the rationalizations for them can be transmitted from person to person and hence from generation to generation. This, of course, is what Korzybski meant by 'time-binding' as a purely human characteristic. Man must learn to be a human being, and what he learns is mediated largely through language, which itself is learned and transmitted like the rest of culture, of whose fabric it is an inextricably interwoven skein. Man, the first, and most completely domesticated animal, is totally dependent upon his interaction with other human beings - men who have learned the same language and who share common cultural values, beliefs, attitudes, assumptions, and techniques. Language is then the sine qua non, the alpha and omega of culture, and language can now be defined as a learned and shared system of arbitrary vocal symbols through which human beings interact and hence communicate in terms of their common cultural experience.

Some scholars, like the American linguist Charles F. Hockett, question our distinction between man and all other forms of life as, at bottom, being based on the distinction between sign and symbol. Hockett insists that this gives the impression that man acquired language and hence became a culture-bearer in 'a single enormous leap', when 'anyone aware of the intricacy of design of every human language' knows that language could have developed only through 'steps and stages'. Many investigators would be inclined to agree, and, like Hockett, see long periods of development leading to a gradual 'opening up' of the 'closed call systems' until we reach the stage termed by Hockett pre-language, which he sees transmitted more 'through tradition' than 'genetically'. During this stage of development our pre-humans are seen as using and carrying tools, but tools of occasion, not tools fashioned with the purpose of meeting exigencies imagined in the future. Be all this as it may, at some time in the past, and obviously later than the Pliocene, a step or stage was reached when our pre-humans became human and pre-language became true language. At this time, and not before this time, man became able to think conceptually and therefore could be the maker of true tools, tools made in a tradition and through techniques able to be transmitted only through true human language. As the British

archaeologist Kenneth P. Oakley puts it, 'Man is a social animal, distinguished by "culture"; by the ability to make tools and communicate ideas'. His compatriot, the famous physical anthropologist Sir Wilfred Le Gros Clark, phrases it this way: 'Probably the differentiation of man from the ape will ultimately have to rest on a functional rather than on an anatomical basis, the criterion of humanity being the ability to speak and make tools'. Note that language and tool-making are seen to constitute a single criterion, and thus man's symbol-making and tool-making abilities become two closely interrelated aspects of his unique behavior. They form the basis of what Hockett terms 'the human revolution', and we may now well ask where and when this revolution took place.

No one now doubts that the Pithecanthropoids - Java and Peking man - who are now classified as Homo erectus were truly human and makers of tools and, certainly in the case of Peking man, users of fire. In Africa, fossil remains assignable to Homo erectus are also found, but they are preceded by hominids identifiable as Australopithecus and popularly termed 'ape-men'. No fossil hominids are represented by so many specimens as these 'near-men' or 'half-men', and they may have reached the stage of development characterized by Hockett's 'pre-language'. At any rate, the evidence indicates that they were users of tools - tools of occasion which they no doubt carried with them, but there was no evidence that they could have been tool makers until, in July, 1959, Professor L. S. B. Leakey of the University of Witwatersrand in South Africa and his wife discovered a big-toothed variety of Australopithecus which he dubbed Zinjanthropus, in close proximity with true human artifacts, the ubiquitous pre-Chellean hand-axes popularly called 'pebble tools'. For some time after the discovery of Zinjanthropus, it was thought by many paleoanthropologists that this Australopithecine of 1,750,000 years ago was responsible for the manufacture of these implements, even though no other Australopithecines had ever before been found in association with tools made in this or any other tradition. Also, there is a sizeable gap between all varieties of Australopithecus, including Zinjanthropus, and the species Homo erectus (formerly called Pithecanthropus, Sinanthropus, Atlanthropus, etc.), even though Australopithecus fulfills the morphological requirements for an ancestor of man. This skepticism as to Zinjanthropus as a tool-maker persisted in many quarters, and it remained for a further discovery of Professor Leakey's to throw new light on the perplexing problem. In 1963 he unearthed another assemblage of fossilized remains which could not be assigned either to the partially hominized Australopithecus nor to the lowly, but demonstrably human, Homo erectus, since in terms of development, the newly discovered species lies between the two others. Also these remains are older than those of Zinjanthropus, being reckoned at 2,000,000 years in the past, but there is every indication that this species and those constituting the genus Australopithecus were contemporary. Since the newly discovered hominid, demonstrably more advanced than Zinjanthropus, though older, is also found in conjunction with pre-Chellean hand-axes, Leakey and his colleague, Professor Philip V. Tobias, have concluded that here was the real tool-maker, in an interesting position vis a vis his truly human cousin. At least one species, or sub-species, Zinjanthropus, seems to have been a user of tools made by Homo habilis, giving us a situation not too unlike having a present-day chimpanzee using a spoon given him by his trainer.

II

Though language is obviously and demonstrably the most intricately structured and by far the most complex modality through which human interaction takes place, there are other modalities found among all human groups which are essential to the communication situation. These modalities can be described under two major headings - paralanguage, very roughly 'tone of voice' phenomena, and kinesics, or the use of structured and patterned bodily motion for communication. It is important to realize that, though paralanguage and kinesics, like bird calls and animal cries, constitute modalities for communicating emotional states and messages which report on the state of the sender, they are part of human culture, and, like language, are learned and shared and are arbitrary systems. Thus every culture does not use the same way of expressing anger or concern or embarrassment through 'tone of voice' or through gesture or bodily motion; there is no species-wide uniformity, no overt and predictable expression of 'human nature'. Rather the paralinguistic and kinesic behavior exhibited by different cultures differs markedly, though every culture uses these modalities to reinforce, negate, modulate, and comment upon parts of the message as well as upon the message as a whole. Further, these modalities also transmit what R. L. Birdwhistell has called 'cross-referencing signals', which furnish vital information as to how the speaker sees himself in relation to those with whom he is interacting and which indicate something as to the nature of the response expected. At times, the culture may dictate that kinesic or paralinguistic events are fully appropriate to carry the major portion, if not the totality, of the message, as, for example, when a handshake, an embrazzo, or a quick turn of the head upward may substitute

for a 'how do you do', or when a 'm-m-m' or an 'uh huh' uttered at the proper time is sufficient to let a wife know that her husband is still 'tuned in' to her account of the day's problems with the children or the neighbors.

Thus all cultures employ language, paralanguage, and kinesics - and in about the same proportion, one to another - in interacting and communicating. Quite obviously, language is far and away the most important modality everywhere, and the oft-repeated myth of the 'tribe', generally located in Africa, 'which cannot communicate much at night because they rely largely on gestures which aren't visible in the dark', is completely unfounded in fact. There is no such human group and there never has been one. All human languages are characterized by what Professor C. F. Hockett calls duality of patterning, while this 'design feature', as he puts it, is lacking in paralanguage and kinesics and in all non-human modalities of communication. What is meant by duality of patterning can perhaps best be grasped when it is understood that all languages have at least two major levels of organization and structure. These the linguist terms the phonological - that level where he is concerned with the study of the sounds of language, and the grammatical, where the concern is with the arrangement of the sounds into words, phrases, clauses, and sentences. Examination of languages shows that a relatively small number of sounds - or, more accurately, classes of sounds - can serve to fulfill all the functions that all languages are called upon to perform. Put another way, the same sound may perform several different roles, the nature of these roles being understood in terms of larger stretches of linguistic material. For example, in English the same sound - say the final z-sound in seize, seas, sees - performs three different functions, each easily differentiated by the native speaker when heard in such environments as I seize, seven seas, John sees. One might say that the z-sound in seize 'just ends the word' but the z-sounds in seas and sees do more; they, and all others similarly occurring, tell us, respectively, that there is more than one (of something) and that an action is being performed by a single actor who is being spoken about. Thus in the two latter cases the final sounds enter into what we often refer to as a grammatical ending, or suffix; they are added to the words sea and see, respectively.

'Endings' of these kinds which recur and which can be seen to have grammatical significance are called morphemes by the linguist. The morpheme is, strictly speaking, a class of sounds 'behaving' in a certain way and having the same grammatical function to perform. Thus in the words (he) sees and (he) seats, the same grammatical function is performed by a final z-sound and final s-sound, respectively, while in (he) seizes, we have the function performed by a weak-stressed vowel preceding a final z-sound. These non-contrasting differences in the sounds of the same morpheme constitute what the linguist calls allomorphs of the morpheme, and whether the s-sound, the z-sound (both spelled -s), or the vowel plus z-sound (spelled -es) occurs depends entirely on the final sound of the word to which the ending is affixed. Thus final sounds like those in see, sigh, rub, beg, run will require a z-sound; words ending in sounds like those heard in meet, slap, crack will require the s-sound, and those ending in sounds like those in seize, cease, match, judge will take the vowel preceding the z-sound. The occurrences of the variants are therefore completely predictable and these allomorphs are obligatory and binding on all speakers of the language.

To return for a moment to the level of phonology, the sounds that constitute the ultimate units of the morphemes are also to be analyzed as classes of differing but non-contrastively distributed members. For example, the initial t-sound in tin is quite different from the t-sound preceded by s in sting. The former is very strongly articulated and is accompanied by a strong puff of breath, while the latter is as weakly articulated as the d-sound in din, and has no puff of breath accompanying it. The final t-sound in pit is described by the linguist as being unreleased and differs noticeably from the other varieties noted and from the final t-sound in slipped when p precedes. To the native speaker, however, all these predictable and non-contrastively distributed variants are reacted to as the 'same' that is, they are all seen as belonging to one class of sounds, or phoneme. Thus they constitute allophones of the phoneme t, and it is such phonemes as classes that contrast with the other phonemes of the language and which are seen as the ultimate building blocks of the morphemes.

The distinction, then, between the phonological and the grammatical strata is unique in human language and of the utmost importance. 'Sames' at one level become 'different' at the next, as shown in the examples above and, again, in such cases as the contrast in function between the final t phoneme in crypt and (he) slipped. In the first case, the t ends the base or root morpheme (and the word), but in the second example it functions as an allomorph of the morpheme generally identified as past tense. It is essential to remember that no phoneme as a phoneme has any significance except in the fact that it contrasts with all other phonemes in the system of the language and hence has the 'power' to enter into combinations that distinguish the

morphemes one from another. Phonemes, morphemes, constructions - all enter into the structured system of arbitrary symbols that all languages consist of, and arbitrariness and duality of patterning together set human language apart from all other modalities of communication.

To return to paralinguistic and kinesics, we find them culturally transmitted and characterized by arbitrariness but totally lacking in the design feature we have termed duality of patterning. Though these modalities are universally human, lacking a grammar as they do, they strike us as more on the side of sign systems, though, being part of human culture, they differ in organization and function from any animal systems so designated and identified. As presently analyzed by many anthropological linguists, there are two major divisions in which paralinguistic phenomena can be described. The first such division has to do with voice qualities, where such features as overloudness versus oversoftness, overprecise articulation versus sloppiness of articulation, overfast versus overslow tempo, a 'flattening' or 'squeezing' of the pitch versus an increase in intervals between pitch levels, etc., can be differentiated. In writing of these aspects of paralinguistic phenomena, the American linguist, G. L. Trager, states: 'These voice qualities as described seem to involve paired attributes, but the pairs of terms are more properly descriptive of extremes between which there are continua or several intermittent degrees'. Another characteristic of the voice qualities is that they may extend over quite long stretches of utterance. Thus a public speaker may use an overall loudness for an entire speech while addressing a large audience, and from this base line all other paralinguistic and linguistic features that depend upon loudness or intensity will be seen to be relative. For example, the difference in degree of stress or 'loudness' heard, say, in the two syllables of the lexical phrase, or 'compound', White House, will be greater in conjunction with the voice quality of overloudness in the public speaking situation than in the absence of that voice quality when the speaker engages in ordinary face-to-face conversation. Each culture 'prescribes', so to speak, what selections of what voice qualities are congruent for what culturally defined speech situations. Thus a man who uses the loudness, pitch range, tempo, and articulation characteristics associated with the speaking platform while conducting an ordinary conversation with his wife in the living room is hardly 'tuned in' to what the culture considers appropriate behavior.

The selection of voice qualities serves to communicate the image the speaker has of himself as the culture gives him to see himself in connection with his relation to those with whom he is interacting. A little man may compensate - or overcompensate - by cultivating a voice of lower than his normal pitch range and with a loud and 'booming' quality. On the other hand, a six-foot-four male hypochondriac might squeeze his pitch range and lower his loudness level to what might be expected in a pre-adolescent female in order to impress his wife of the seriousness of his condition when he has been stricken with a cold. In other words, it is not the actual physiological state of the organism that is being signalled, but the individual's conception and interpretation of his state as he has been given to understand it through his culture. Though the kind of information sent by means of selections of voice qualities is strikingly analogous to that sent by the call systems employed by certain animals and birds, again there is this great difference: all paralinguistic manifestations have been incorporated as part of human culture and form part of the matrix in which language proper takes place.

The second major division under which paralinguistic phenomena may be examined has been named vocalizations. Here three levels have been distinguished, called, respectively, vocal characterizers, vocal qualifiers, and vocal segregates. All of the events studied under these classifications are alike in contrast to the voice qualities in that they are 'turned on' and 'turned off' at certain perceivable and relatively short intervals. A vocal characterizer like breaking, as heard in the so-called 'nervous giggle' or when an orator wishes to impress us by his sincerity, seldom continues for more than what we generally think of as the elapsed time of a single sentence. Breaking has been described by the psychiatrist R. E. Pittenger as an 'intermittent tenseness and laxness of the vocal musculature creating the tremulousness and the interruption of tone often heard as a signal of great emotion or signalling intense emotional involvement'. In contrast to the voice quality termed rasp, which is produced by a steady and forceful vocal lip control and which continues over long stretches of speech, breaking quite noticeably stops and starts up again, even when used in conjunction with several connected sentences. Vocal characterizers labeled crying and laughing are present when one 'talks through' tears or laughter, and vocal characterizers include the phenomena noted when language comes through moans, groans, yawns or even belches.

The vocal qualifiers are even more restricted in their duration, seeming never to continue more than the span of a single intonation pattern or 'breath group'. The features of intensity, pitch, and duration form

the basis of the three sets of vocal qualifiers, and we can distinguish three levels of overloudness matched by three of oversoftness, three levels of over-high pitch in conjunction with three levels of over-low pitch, and three degrees of 'drawling' paired off against three degrees of 'clipping', all relative to an established base line. Here the events based on the features of intensity, pitch, and duration are seen to be separate and distinct from the phenomena based on these features and described as voice qualities. That is, the vocal qualifier of overloudness or the vocal qualifier of 'drawling' can be heard, in relatively short stretches, to operate over and above the voice qualities of overloudness or of decreased tempo. Thus the orator, employing the culturally accepted overall deliberateness of delivery, can further increase as well as decrease his loudness and can further slow down the articulation of certain portions of his speech.

The vocal segregates are even shorter in duration. Here a series of noises very similar to the phones or sounds of true language are seen to pattern not only in terms of oppositions, but to be put together in packages which may seem very similar to words. For example, the utterances generally written 'uh uh' and 'uh huh', signifying dissent and assent, respectively, are composed essentially of a contrast between a rapid closure-release of the vocal cords - a glottal catch - and a momentary free passage of air through a narrow, slit-like opening of the vocal cords to give an h-like sound, or glottal spirant. But there is a vowel-like event that follows both the glottal catch and the glottal spirant, and the consonant and vowel-like segregates together form a 'package'. The vowel-like segregate is the same one heard so often when a speaker pauses, hesitates and gropes for a word, and is usually written uh. To either the dissent or the assent package may be added another segregate, that of nasalization, and this addition may be articulated with or without a segregate of lip closure to give something that could be written, I suppose, as 'uhn uhn' versus 'uhn huhn', and 'uhm uhm' versus 'uhm huhm'. Then, too, such packages of two, three, or more vocal segregates can, on the one hand, be clipped or drawled, said with over-high or over-low pitch, etc. (vocal qualifiers) and, on the other hand, be encased in a pattern of stress and pitch and juncture phonemes, which are components of true language and not paralinguage. Vocal segregates are, therefore, on the very borderline between true language and paralinguage, and it becomes essential to be able to draw the line, for each culture, between the events that are properly paralinguage and those that are properly described as part of language per se. It should be noted here that a package of vocal segregates, though at first glance seemingly similar to a grouping of phonemes into a morpheme, does not exhibit duality of patterning. There is no grammar, strictly speaking, as exhibited in true language.

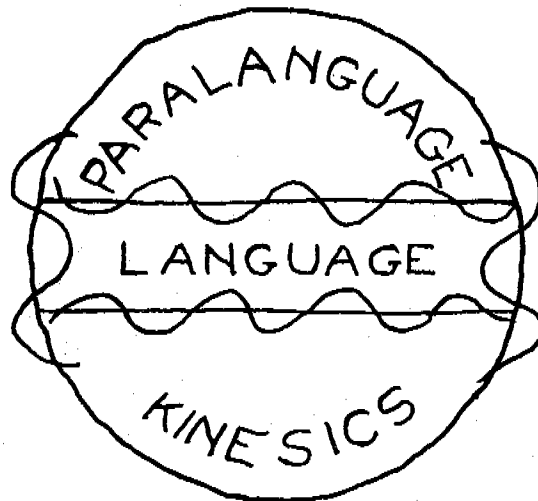
The line between language and paralinguage is admittedly difficult to draw, but it is essential if we are ever to describe language or a language in terms of its own unique components, learned and reacted to entirely in the 'symbol-digital' way. It follows as well that the line must be drawn if we are to begin to understand the culturally incorporated but seemingly more 'primitive' modalities we are calling paralinguage, which still seem to exhibit some of the characteristics of protohominid and pre-hominine communication. But it is essential, once again, to call to mind that all cultures characteristically use paralinguage as an accompaniment of true language and that paralinguistic events are truly incorporated as part of culture. Even though reminiscent of the 'sign-analog', non-human modes of communication, and even though lacking duality of patterning, such phenomena as the packaging of vocal segregates and the contrast-opposition features characteristic of the other levels of paralinguage can be seen as the result of a transformation and reworking of the pre-hominine elements into something that is truly human and differs in kind from the seemingly analogous animal communication systems. Like all else that is part of culture, the use and interpretation of paralinguistic events depend upon symboling; they are symbolates here being considered in an extrasomatic context. The very fact that we are analyzing and describing these symbolates as different from language by using language itself in the analysis and description again demonstrates the primary role that language plays in all human communication, and serves to emphasize the essential difference between language and paralinguage.

Similarly, in the area we have designated kinesics, we are dealing with 'events and acts upon which meaning has been bestowed by human beings' and hence with symbols in Leslie White's sense of the word. In this area, an analysis roughly comparable to the analysis of paralinguistic events seems to be useful. To voice qualities, there are comparable 'body qualities' like stance characteristics and overall muscle tone. These also serve as cross-referencing signals and continue over large portions of other communicative behavior. Other kinds of kinesic events last for shorter stretches, and in the case of gestures we have something analogous to the packages of vocal segregates, and, like the latter, gestures can be broken down and analyzed into components, with the entire combination taking place in a relatively short period of time.

Arbitrariness is again characteristic; and pointing with the index finger, for example, which may impress us as 'normal' and 'natural' and 'human nature' is only one of the ways cultures use for indicating things in the immediate environment. If we looked at pointing in each culture, we might very probably find that many more cultures pointed with the chin or the lips than with the index finger, though the great majority of human beings belong to cultures that point with the index finger. So we all must learn to point in the way our culture prescribes, as we all must learn - in cultures like ours - to nod the head for assent and shake it for dissent. Thus, too, when we wink and how we wink, at whom, under what circumstances; when we smile or frown - all these must be learned and fitted into a congruent relationship with language and paralanguage. Baboons seem to depend primarily upon kinesic behavior in their 'sign-analog' kind of communication, with vocalizations playing a relatively minor part; but for human beings kinesic behavior has, like paralanguage, become reworked and has taken on 'symbol-digital' characteristics, and emerges as something fundamentally different in kind from the kinesic behavior of our anthropoid cousins. But again, there is lacking the true duality of patterning that language alone shows in conjunction with arbitrariness, and this forces us, as was the case with paralanguage, to separate kinesics from language. We must remember, however, that no human interaction goes on for very long without all these modalities operating, as it were, simultaneously.

Each modality has a contribution to make to the message as a whole, and the three codes must be seen as separate, though interrelated. Though we perhaps most often think of the meaning of a message as reposing in the meanings of the words we use, we must realize that words take on quite different meanings in relation to the patterns in which they can occur. Meaning is not encapsulated in word, gesture, or vocal qualifier, but rather results from the totality of the events selected from all the modalities operating together in a real speech situation where human beings are interacting. Each culture has different 'rules' as to what selections can or must be made, and each human being in each culture must learn the rules as well as the modalities. If he does not conform within the culturally prescribed permissible limits, he will not only be misunderstood but may even run the risk of being considered psychotic.

A schema such as that below is designed to show the central position occupied by language in its relation to paralanguage and kinesics and to indicate the connections between these modalities themselves, directly, and through language. The wavy lines are intended to show these interconnections and to represent the fact that within each culture's communication systems there are systematic and obligatory ways in which these interrelations must take place. We have used the term speech to refer to the totality of the events manifested by all these modalities and thus have been able to reserve language for the unique dually patterned code.



The modalities used in human speech seen as interrelated, though separate, codes.

III

To return once again to language, a series of perplexing questions continues to fascinate scholars. The first of these has to do with the age of language, and, in the light of the evidence and argument presented

above, there is only one answer to this question, though it can be phrased in several different ways. That is, one can say that language is as old as humanity itself, or that language is as old as the first tools demonstrably made in a tradition, or that language is as old as culture, or that language is as old as conceptual thinking. Thus language is at least as old as Homo habilis, and, if our dating is accurate, true man and true language go back at least two million years. Coupled with this question are two others. The first asks whether language originated or was 'invented' more than once, and the second asks whether or not language or languages show evidence of evolutionary changes and development. Granted that answers to these questions that are convincing to all investigators are not likely to be forthcoming, in answering the first of the two we can note that there is some evidence quite convincing to some that true language came into being only once and was diffused rapidly to all hominid primates capable of learning it and using it. In substantiation of this position, it may be stated that all languages today lend themselves to the same kind of analysis and show far more similarities in design features and structural organization than they show differences, even though each language is a system unique in itself. There is an analogy here with the invention and diffusion of the alphabet. The idea of the alphabet, that is, the alphabetic principle, was hit upon only once and rapidly diffused, even though the shapes, number, and order of the letter symbols have changed in the course of time and now vary markedly from culture to culture. Thus though alphabetic writing came into the possession of various cultures at various times, and though alphabets may be different in appearance, every alphabet has an equal amount of history behind it and there has been no evolution of the alphabet, but only non-essential changes and adaptations of the original principle. Thus when the Turks abandoned the Arabic form of the alphabet in favor of the Latin form, they did not accept a 'more evolved' or 'higher' form of the alphabet, but only a different form.

Quite similarly, each language has the same amount of history behind it, and there is no evidence that language in general or individual languages have passed through successively 'higher' or 'more evolved' stages of organization. To put it another way, the notion that 'primitive' peoples have 'primitive' languages just won't stand up under examination, and, conversely, we can find no evidence to support the idea that the 'civilized' languages of our present industrial nation-states are in any way intrinsically superior to the languages of non-industrialized societies. What does become evident is that each language reflects and transmits the rest of its culture equally efficiently - or inefficiently, for that matter. Furthermore, if something is added to the content of a culture, the language will immediately have a way of referring to it and everything pertaining to it. This follows whether or not the invention, idea, institution, or whatever was developed indigenously or borrowed from another culture. Thus technological or other cultural development is simultaneously matched by addition to the vocabulary of a language, but no essential change takes place in the structure of that language. This is not to say that language, like all of culture, is not constantly in the process of change. Alfred's English was quite different from the English of Elizabeth II or of Lyndon Johnson, but the changes do not necessarily reflect a 'higher' form of language evolving from an earlier and 'lower' form. So, too, Chinese, Japanese, and Russian are languages of radically different and unrelated structures, but none is more 'advanced' than the others, and all are used successfully as vehicles for highly complex technologies and increasingly industrialized societies.

It is, of course, true that at the present time one of the languages of a highly industrialized western nation is a more efficient vehicle for expressing various aspects of advanced western technology like rocketry or lasers than would the language of a non-literate group in the hills of New Guinea, but, again, any language can become and will become the linguistic means of handling anything that has become an integral part of the culture. As an example, in Nyangumada, a language spoken by 500 Australian aborigines scattered for 270 miles along the Northwest Coast, the native word which we can render ngandir means 'bouncing of a boomerang after it has hit the ground', but the reduplicated form, ngandirngandir, means 'retraction of the landing gear of an aeroplane'. To use the words of the American linguist, Dell Hymes, 'vocabulary is the linguistic analogue of technology', but development in technology or acquaintance with such development and consequent addition of technical vocabulary terms does not constitute linguistic evolution, no matter how such development is seen in terms of the evolution of culture. For language is far more than words or vocabulary items; language is pattern and structure and system. It is context, context seen basically in terms of the words that can or must precede and follow any given word and the patterns resulting from these permissions and prohibitions of occurrence that enable words to do their work for us.

This fact leads us to a consideration of the question of words and meanings. Most of us probably think of words as linguistic entities which are, so to speak, repositories of meaning. Further, we may well have

been led to believe that words have or should have one and only one meaning. We fail to realize that, in point of fact, no word ever has exactly the same meaning, since there is bound to be a minute change of reference each time the word is used, because the context, linguistic and social, is never quite the same. Thus 'table' does not mean the same thing in the sentence 'Put the water on the table' as it does in 'Determine the depth of the water table'. And the fact that the precedes such nonsense or 'double talk' words as frammis and fortecyte in the sentence, 'Go get Daddy the frammis; it's on the fortecyte' is sufficient indication to a three-and-a-half year old child that 'frammis' and 'fortecyte' are both nouns; that is, they must refer to things in the world of reality that the child is capable of locating and transporting. Also note that nouns themselves can be divided into two major categories, depending upon permission or prohibition of occurrence in certain distributional patterns. Thus the word 'some' when said with weak stress can only precede ('modify') nouns like wine, stone, intensity, and pulchritude, but not nouns such as boy, book, John, or Chicago. For example, we can say, 'I want some wine', but not 'I want some book'. But some with strong stress can precede nouns in either category, though with quite a different meaning - 'I want some wine, but I can't remember the name', and 'Some boy came in here looking for you, but I don't know who he was'. We note further that much regularly precedes nouns of the first category, but not those of the second - much wine, but not much book - and it is upon such criteria of distributional permissions and prohibitions and not upon criteria based on referential meaning that we can now give to nouns of the first category the label unspatialized and to those of the second, the label spatialized. Proceeding one step further, we can say that unspatialized nouns may enter into constructions - more technically, collocations - which we may term partitive. Thus some wine could be termed the indefinite partitive, and much wine the quantitative partitive. In contrast to the indefinite partitive, when some is said with strong stress and is followed by nouns of either category, another collocation can be identified which we can call the indefinitive - some wine, some wines; some book, some books.

We could continue our categorization of nouns and the collocations in which they occur and add categorizations of verbs, adjectives, etc., and of their collocations until we had a set of complete and detailed statements for English. Other languages closely related to English would furnish similar though different statements based on somewhat different criteria, while languages of markedly different structures will be seen to handle this aspect of message-sending in very different ways. If we now shift our attention to a level of patterning more extensive than that of the collocation, that is, to the sentence as a whole, we find that related languages, though differing noticeably in structural details, exhibit a basic and underlying structural similarity in what might be called the 'essential sentence' or the 'favored sentence type'. Thus though Latin, German, English, Sanskrit, and all the other members, past and present, of our Indo-European family of languages are uniquely different linguistic systems, they all agree in favoring a basic sentence type that may be characterized as actor-action-result or actor-action-goal. This is the subject-verb-object or subject-verb-complement pattern so familiar to us all, where nouns or pronouns identifiable through morphemes or through distributional criteria fill the clearly separable and neatly discrete actor and result/goal slots, while verbs occupy the action slot. A further obligatory feature is seen in the fact that the verb, through the presence of morphemes or some other structural device, must signal the 'time-when' of the action; and, conversely, words that take such morphemes in languages like English are by definition verbs. All Indo-European languages have always had obligatory tense systems, at least to the extent of signalling through morphemic suffixation a past tense versus a non-past or present. Most languages, on the other hand, lack an obligatory tense system, and their speakers think it highly amusing when we have to say, 'He dropped the box', and signal the event as having taken place in the past even though both the speaker and the person or persons addressed observed the action as it happened. Many of these languages would need only to say, in cases similar to this, something like, 'In respect to the box, a dropping'.

Also, most languages have no distinct words or lexical items equivalent to English time or Latin tempus, and therefore it is not surprising to find that the speakers of these languages have quite different conceptions as to the nature of time and its passage than do we. For them, time is a sort of subjective awareness of a 'becoming later', and not the objectified entity it is for speakers of, say, English or Russian. For example, what is to us such a simple and obvious 'statement of fact' as, 'Ten days is greater/longer than nine days', can only be rendered in Hopi as, 'The tenth day is later than the ninth'. We Indo-European speakers talk of time as though it were a material; that is, time, as a noun, fits into the same category as do water, milk, wine, stone, wood, steel, and, interestingly enough, space. We speak about time and behave in regard to it as though it were something palpable that we could handle and manipulate. We cut it up into lengths or periods in a manner similar to the putting of wine into bottles or the shaping of stone into blocks. We lose and find

large and small amounts of time; we give it and we take it, we waste it, we save it, and we spend it; on radio and television we even buy it and sell it.

Our actor-action-result/goal sentence type, with its discrete slotting and with its required placing of the verb along an objectified and segmented time-line, presents a very different situation from that of languages which lack the feature of obligatory tense and which, like Chinese, say, have a sentence type that can be described as topic, comment. If a lifeless animal is observed, our linguistic system forces us to say, 'The dog (or the horse) is dead', putting the verb in the present or non-past tense. To the speaker of Chinese, this statement has its ludicrous aspects, since it is obvious to both him and us that the dog is no longer alive, has been lifeless for some time in the past, and will remain so for some considerable time in the future. He finds it far more natural and logical to say, 'Dog, dead' (topic, comment). And the combination of obligatory features characterizing our favored sentence type greatly reinforces our awareness of and concern with certain aspects of reality at the expense of certain others. Our sentences are almost ideal for expressing the cause and effect aspects of the world of experience, since we speak constantly of an actor/subject as performing an action in the past which can be seen to be the event leading to a new situation in the present - 'Jones/he/ someone killed the dog'. (The dog is [now] dead.) Thus, since so many actions which can be referred to by a single verb or verb phrase are seen to be the necessary antecedents of so many events which are referred to by a single noun, we 'talk' ourselves into the error so well expressed in the old saw, 'Every effect has its/a cause'. We fail to realize that complicated combinations of events are just that, even though we can refer to them by single nouns such as 'situation' or 'mess'. Furthermore, such complicated combinations of events are seldom, if ever, caused by just one isolable event in the past. Despite this obvious state of affairs, we constantly read, hear, and repeat such nonsensical statements as, 'The Yalta agreement is responsible for the mess we're in today'. In addition, since the actor slot may be filled by any category of noun, we perform reify abstract and other inanimate nouns and react to our sentences in such a way as to 'carry around in our heads' a very inaccurate picture of reality. Note the following sentences: 'The path runs around the pond', 'The road went to Paris', 'Communism is stalking across the face of Asia' (inflation gallops, socialism creeps). This kind of extensive use of metaphor in 'down to earth' prose is very confusing to those who must learn English or one of the other Indo-European languages as a vehicle for learning western science. I can remember a graduate student from Southeast Asia who said to me once, 'You say that "The land rises sharply behind my house" is prose, but "The bosom of the sea is heaving" is poetry. How do you know?'

Our preoccupation with cause and effect and our discrete slot or lineal segmentation of the continuous flux of experience often leads us to abstract certain aspects from a totally integrated situation and force these into the Procrustean mold of actor-action-result. This practice, stemming, of course, from our compulsion to put our finger upon and label the cause of a complex of interrelated factors and features, leads to the formulation of the meaningless question of the chicken and egg type. We can all remember hearing and, perhaps, debating such questions as, 'Do societies make governments, or do governments make societies?' Quite obviously, the word 'society' sums up a vastly complex interrelation of systematic aspects of behavior, one of which we can, for the purposes of analysis and description, identify and label 'government'. This kind of institutionalized behavior is, of course, found only in the matrix of a society, and its abstraction from the totality is possible only because human beings talk and think as they do. Similarly, the questions, 'Which came first, language or culture?', or 'Did language cause culture, or did culture cause language?' are equally meaningless, since language and culture are inextricably interwoven aspects of the same totality.

Indo-European languages, then, reinforce a picture of the world which presents a relatively unaffected actor as free to take action and bring about a result. The sentence types of many other languages, on the contrary, reinforce a concern with being, with equilibrium between the individual and his environment, with the status quo and adjustment to it, rather than with change. This has been well put by the American anthropological linguist, Harry Hoijer, in speaking of the Navaho:

Navaho man lives in a universe of eternal and unchanging forces with which he attempts to maintain an equilibrium, a kind of balancing of powers. The mere fact of living is, however, likely to disturb this balance and throw it out of gear. Any such disturbance...will, the Navaho believe...be revealed in the illness or unexplained death of an individual, in some personal misfortune, or in some community disaster.

Our kinds of languages, though, help to present to us a view of the world as a series of problems we must and can solve, inevitable difficulties we must and can overcome, goals we must and can attain. And all this must be done in a definite and limited period of time. 'The time is out of joint, oh cursed spite, That ever I was born to set it right!' is truly the lament of western man. We would rather try to bring about a desired result and fail, than to do nothing and 'let events catch up with us'. 'Don't just sit there, do something', is dinned into our ears at every turn. 'Doing something' inevitably means change, and 'change' is equated with progress, which one great American corporation has identified as 'our most important product'.

What we have been considering above, that is, the possible effect of shared linguistic patterns upon the speakers' conception and perception of the world of experience, has been called, variously, the Sapir-Whorf hypothesis, the linguistic-relativity hypothesis, and the linguistic Weltanschauung hypothesis, and the Sapir-Whorf-Korzybski hypothesis. Perhaps it has been most succinctly stated by the late American linguist and anthropologist, Benjamin Lee Whorf, in the following words:

The background linguistic system (in other words, the grammar) of each language is not merely a reproducing instrument for voicing ideas but rather is itself the shaper of ideas, the program and guide for the individual's mental activity, for his analysis of impressions, for his synthesis of his mental stock in trade. Formulation of ideas is not an independent process, strictly rational in the old sense, but is part of a particular grammar and differs, from slightly to greatly, as between different grammars. We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds - and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way - an agreement that holds through our speech community and is codified in the patterns of our language. The agreement is, of course, an implicit and unstated one, BUT ITS TERMS ARE ABSOLUTELY OBLIGATORY; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees.

Whorf's teacher, the great anthropologist, linguist and psychologist, Edward Sapir, in 1931 had stated the situation as follows:

Language is not merely a more or less systematic inventory of the various items of experience which seem relevant to the individual, ...but is also a self-contained, creative symbolic organization, which...actually defines experience for us by reason of its formal completeness and because of our unconscious projection of its implicit expectations into the field of experience...[Meanings are] not so much discovered in experience as imposed upon it, because of the tyrannical hold that linguistic form has upon our orientation in the world.

Thus we not only receive impressions of the world screened through the distorting lenses of our linguistic systems, but we also project upon experience, through those same distorting lenses, relationships that are not necessarily there, at least not as our language forces us to talk about them.

So to a very large extent, as a man talks, so does he think and feel, and the relationship between language and thought is also seen to be one of the most intricate interconnection and interdependence. Sapir puts it like this:

We see this complex process of the interaction of language and thought actually taking place under our eyes. The instrument makes possible the product, the product refines the instrument. The birth of a new concept is invariably foreshadowed by a more or less strained or extended use of old linguistic material; the concept does not attain to individual and independent life until it has found a distinctive linguistic embodiment. In most cases the new symbol is but a thing wrought from linguistic material already in existence in ways mapped out by crushingly despotic precedents.

It is these 'crushingly despotic precedents', that is, the linguistic system in all its obligatory and arbitrary aspects, that underlie so much of our perception and our cognition and so many of our expectations of the world of reality. Logic becomes the sensing, quite below the level of verbalization, of the basic structuring of experience given us by our favored sentence type. That statement, which to many is as comforting as it is incontrovertible - 'Two plus two is four' - is but an extrapolation one level higher in abstraction of actor-action-result. The very cornerstone of our 'identity logic' is based on our favored sentence type with the verb be properly placed in the action slot, but any system of natural logic must be fallacious if language itself - 'ordinary language', if you will - which comprises the essential building blocks of the system, is taken for granted. Where we see things as either A or not A with no middle ground, the Chinese rather would build a 'correlative logic' or a 'relational logic' which, rather than stressing polar opposites and the complete separation of events into watertight, dichotomous compartments, would stress systematically the relation of opposites and the interdependence of dichotomies. To us there is no compromise between good and evil, right and wrong, moral and immoral, in no small measure because we can find no words that will 'split the difference' between these pairs. Even amoral, which purports to be such a word, is attracted to the side of the dividing line with evil, wrong, and immoral. Following this 'logic', in Anglo-Saxon courts you plead only 'guilty' or 'not guilty', and are presumed not guilty until proved guilty by due process of law. If a legal technicality frees a man who is known to be guilty, our culture requires that he be treated as though he were innocent. In other cultures, where there is presumption of guilt rather than of innocence, the endeavor is to prove how guilty the accused is; it is the rare case where complete innocence is established. Even more interesting, perhaps, is the reaction so many of us have to such pairs as practical and theoretical: Practical is obviously good and, therefore, one of its opposites, theoretical, must refer to something at least somewhat suspect. So, too, since work is so highly-prized and moral, it is not surprising to find us reacting to its opposite, leisure, as something that is likely to cause, at the very least, problems, since 'Satan always finds some work for idle hands to do'.

We are led to see the world in shades of black and white, never in shades of gray; the Chinese knows the world has never been completely free of evil of every kind and never will be. We pursue happiness as though it were extractable as pure, unalloyed bliss, and are disappointed to find such a state permanently eludes our grasp; the Chinese counts each small blessing, and when asked how he is replies, 'For the shape I'm in, I should complain?' Where he learns to live with adversity, we must strive to shape a world that is totally devoid of problems, and in so doing all men of good will must rally round our standards, since there can be no compromise, no middle ground, no 'neutralist position' between the good we seek for ourselves and all mankind, and the polar opposite, which can be seen only as a slipping back into the evil, the ignorant, the sinful ways of the past.

Even though all our friends and allies might not see eye to eye with us, I feel sure that we need desperately to understand ourselves and our motivations far more thoroughly than we do. Greater knowledge of language and all aspects of communication can only furnish much-needed insights into the most pressing of today's problems - how man can live with man on this shrinking and divided globe.

BIBLIOGRAPHY IN ORDER OF CITATION

1. Kroeber, A. L., 'Sign and Symbol in Bee Communications' in Proceedings: National Academy of Sciences, Vol. 38, 1952, 753-7, cited in reference 2. Sebeok pp. 931-2.
2. Sebeok, T. A., 'Coding in the Evolution of Signaling Behavior' in Behavioral Science, Vol. 7, October 1962, pp. 930-2.
3. White, Leslie A., 'Symbolizing: A kind of Behavior' in Journal of Psychology, Vol. 53, pp. 311-7.
4. Cassirer, Ernst, An Essay on Man, Yale University Press, 1944, pp. 24-5, cited in reference 3. White p. 314.
5. Barnett, Homer, book review in Science, Vol. 148, 2 April 1965, p. 61.
6. Hockett, Charles F., 'The Human Revolution' in Current Anthropology, Vol. 5, June 1964, pp. 135-68.
7. Oakley, Kenneth P., Man the Tool-Maker, University of Chicago Press, 1957, p. 1.
8. Clark, Wilfrid Le Gros, cited in reference 7. Oakley, p. 3.
9. Tobias, Phillip V., 'Early Man in East Africa' in Science, Vol. 149, 2 July 1965, pp. 22-33.
10. Leakey, L. S. B. et al., reprints from Nature in Current Anthropology, Vol. 6, October 1965, pp. 412-31.
11. Birdwhistell, R. L., 'Implications of Recent Developments in Communications Research for Evolutionary Theory' in Report of the Ninth Annual Round Table Meeting on Linguistics Studies, William A. Austin, ed., Georgetown University Press, 1960, pp. 149-55.
12. Trager, George L., 'Paralanguage: A First Approximation' in Studies in Linguistics, Vol. 13, 1958, pp. 1-12.
13. Pittenger, Robert E., 'Linguistic Analysis of Tone of Voice in Communication of Affect' in Psychiatric Research Reports 8, American Psychiatric Association, April 1958, pp. 41-53.
14. O'Grady, G. N., 'New Concepts in Nyangumada: Some Data on Linguistic Acculturation' in Anthropological Linguistics, Vol. 2, January 1960, pp. 1-6.
15. Hymes, Dell H., 'Functions of Speech: An Evolutionary Approach' in Anthropology and Education, Frederick Gruber, ed., University of Pennsylvania Press, 1961, pp. 55-83.
16. Hoijer, Harry, 'The Sapir-Whorf Hypothesis' in Language in Culture, Hoijer, ed., The American Anthropological Association, Vol. 56, Memoir 79, December 1954, pp. 92-105.
17. Whorf, Benjamin Lee, 'Science and Linguistics' in Language, Thought, and Reality, John B. Carroll, ed., M. I. T. Press, 1956, pp. 207-19.
18. Sapir, Edward, 'Conceptual Categories in Primitive Languages' in Science, Vol. 74, p. 578, cited in reference 16. Hoijer, p. 93.
19. _____, 'The Status of Linguistics as a Science' in The Selected Writings of Edward Sapir, David G. Mandelbaum, ed., University of California Press, 1949, pp. 160-8.
20. _____, Language, Harcourt Brace and Company, New York, 1939, pp. 16-7.