CHILDREN'S LANGUAGE SHOULD BE LEARNED AND NOT TAUGHT

Raymond P. Stevens

Children who are born deaf do not learn to speak because they cannot hear. They do not hear other people speaking; consequently they cannot imitate the sounds we call speech. They cannot hear themselves vocalize; so they cannot monitor the sounds they make. To learn speech a person must be able to hear models to be imitated and to monitor the sounds made in attempting to imitate the models.

Deaf children can be taught to speak--provided that specialized instruction presents not auditory but kinaesthetic models and guides their attempts at imitation by use of the instructors' hearing and coaching as the indirect monitoring channel. But not all deaf children are taught to speak with proficiency and intelligibility. Only a very few, perhaps five to ten percent of them, acquire speech skills sufficient for communication in a near-normal, non-frustrating way. The great majority of deaf people, both children and adults, have non-functional speech. Yet, because nine out of ten deaf children have hearing parents, speech has become the focal point in the educational process of most deaf children.

Deaf children do not learn language--the English language in America--of a kind acceptable to others, because they cannot hear. They do not hear the language and consequently do not learn the patterns that make up sentences, phrases, and idioms.

Unfortunately, learning to speak and acquiring language have often been equated and confused; as a result the ability to produce speech sounds has become more important in the eyes of many teachers and parents than the possession of language. The consequences of mutism or quasi-mutism caused by deafness are great and permanent for the adult. Teachers should do all they can to teach speech, to give the deaf child functional speech. The failure to try is a sin; the failure to succeed is not, however, as bad as most hearing people seem to think. Deaf people communicate in other ways than in speech.
The failure to learn English has far greater and more devastating consequences than the failure to learn speech. Our educational system depends on English much more than on speech. The world of trade and industry, social services, and technology depend on language which is expressed in a variety of forms. The deaf child who cannot speak can often write or fingerspell or sign, but the child who does not know the English language has no way to communicate with precision. Speech is only one form of communication; English is the only language of our culture. The child who cannot speak is cut off from only those people who will not take the time to use another form of expressing English. But the child who has not learned English and has not acquired an education in its use has nothing to say and no one to listen to him. Unfortunately, the parrot-like speech of the illiterate deaf child is more a reassurance for the parents than a practical way for the child to communicate. There are many successful deaf adults who do not have speech. There are also deaf adults who can speak but have nothing to say, who have gone to school but who can't think.

Education for the deaf has the talents and the energy to succeed. Ironically, schools and classes for deaf children could be relatively more successful than schools for hearing children, simply because deaf children are much more dependent on the educational process than are hearing children. Almost everything that is taught in school is new to the deaf children. Unfortunately, however, the system has not done well. There are many controversies and antagonisms within the field. There is little agreement on major goals and objectives.

Generally, the question, What is the most important thing in deaf education? gets three answers. One group of educators will say: "Speech and oral communication skills." A second group may say: "Language or education." A third group, deaf people themselves, often say: "Communication."

"Communication" in this answer is not to be equated with English or spelling or lipreading or even with sign language and fingerspelling. I believe that deaf people mean communication not of language but through language the attitudes, knowledge, thoughts, desires, expectations, and mores that make individuals part of their culture. I will agree with anybody who says that deaf people get along better if they have intelligible speech, good
spoken language, or a Ph.D. in literature. But the youngsters and adults who don't have intelligible speech, the King's English, or educational shingles are set apart, I believe, not because of language and speech but because of culture. Not culture in the sense of the fine arts, sophistication, and style, but culture in the sense of socialization and behavior patterns and social characteristics common to a particular group of people. The most important tool or vehicle in the socialization process of people is language. Language is a means of socializing individuals into their culture. Parents talk to their hearing children, not in order to teach them a language, but rather to satisfy their needs and wants and to teach them right and wrong as regarded by their society. The children talking with their parents are learning the language of their culture; they are not being taught it. They are learning language as a tool. It is functional. It is a means to an end. That end is satisfaction of needs and wants, the acquisition of acceptable behavior, and the recognition of themselves as individuals.

Deaf children, on the contrary are taught language. True, their teachers want them to read, but teaching language has become the end, not the means, of the educational system. The teachers' communication with the deaf child is too often about language instead of about his environment, his culture, his very life. School for the deaf has become a place to be forced to learn a strange and foreign language and speech rather than a place to learn about culture, and in doing so to learn language.

The consequences to the child of not being a part of the larger culture are a low reading level, a different sense of humor, and a different language. Deaf students who do not read, cannot--because they are not socialized into their culture. English in its printed and spoken forms is the language of the culture. Until deaf children learn English in the same manner that hearing children learn English, the majority of them will not succeed in school, will not read, and will not hold jobs commensurate with their innate abilities. Deaf education must communicate the culture, the attitudes, the humor, the folkways, the family traditions to deaf children. English language must become the product of that communication.

Deaf children must learn culture and language simultaneously. All that my grandmother, or that sociologists and teachers of the deaf, would call "culture" and say was important for each person to know is on the other side of the soundless barrier for each deaf child. Properly directed, education for the deaf could be devoted to breaking that soundless barrier.
All native or mother-tongue languages are learned. For too long the education of the deaf has concentrated on teaching the language. This is contrary to the natural process of language learning. Simply stated, language must be learned and not taught. Language and culture are acquired by the growing child and cannot and should not be forced into him.

Language in this sense of the word is the system of communication, whether English, French, or so-called Deaf English, that is learned through experience and use, learned out of necessity—nothing like the system that is presented in the classroom. Language is an organic, dynamic, unexplainable neurological phenomenon that can take the forms of English, French, or of anything else that people use. Some of the formal rules of grammar can be taught in the classroom, but language as communication must by its nature be learned. On that precept, deaf education must focus its energy and talents.

Some time ago someone devised the slogan, "Talk, talk, talk, talk to your deaf child." Such advice implies an understanding of the nature of language acquisition and development. Unless children, deaf or hearing, are exposed to language, they will not learn it. Unfortunately, for a deaf child, talking is an unclear, ambiguous exposure to the system of oral communication. For too many deaf children, talking simply becomes the blurred and meaningless movement of faces—sometimes perhaps communicating feelings or emotions but never communicating precise verbal messages.

Hearing children learn language through modeling as they develop conceptually. Their experiences guide and foster their command of language. As they become older they become more skilled in communicating not only their physical needs and wants but also in abstracting, that is in expressing themselves intellectually. Deaf children develop language very much as hearing children do. In a family of hearing people, deaf children have almost no formal language, but they have simple gestures or signals, which can change from day to day. Once the deaf child comes to school, he is exposed to a variety of formal language expressive systems (lipreading, speech, signs, writing), and immediately begins to learn language. His teachers work as diligently as possible to teach him as much as they think he can absorb. He learns to communicate in some fashion, using any (at times all) of the forms he has been exposed to. After eight or ten years he writes better, takes tests, and passes silly notes to girls. He is using language. but it
is not English:

"My nose is maple syruping"
"Mr. Stevens and I scorched our way to school this morning"
"I am my nose"

--these are communications in language, but they are not in English in the formal sense of
the name. They do not follow the generally accepted rules of English.
Hearing children learn English because the volume of English they hear is sufficient for
them to learn the rules of English. This critical volume of exposure has been heard by the
time the child is four years old, long before he is independent of his parents, and before he
has matured intellectually. Thus, as his independence and individuality bloom,
simultaneously his ability to communicate his own uniqueness develops. While the language
that he acquires is common to all, the way that he uses it and what he says mark him as an
individual.

Language acquisition for the hearing child is a high-level cognitive, thinking process. The
child hears hundreds of examples of the rules, no one states to him one one-hundredth of all
the rules. From heard examples of language in practical use the child must deduce the rules.
Hearing children are able to express themselves early in their lives in an increasingly
sophisticated way. Some children can communicate simple needs before their first birthday
(e.g. 'water' or 'milk', even though these sound like wawa and mik). The more complicated
syntactic structures forming sentences are used by their second and third birthdays. Deaf
children, however, are not exposed to enough English sentences for them to learn English.
Furthermore, deaf children have to wait for years to learn simple patterns for expressing the
most mundane and common things in their lives. They are not exposed to the volume of
English sentences necessary for them to learn the syntax of the language. But because they
have the need to communicate, they impose rules of syntax and structure on the words and
phrases they know, thereby creating their own form of language (see Goldin-Meadow &
Feldman 1975).

This need to communicate demands an orderly, clear, reliable system. Deaf children are no
exception to this cultural, psychological, linguistic phenomenon of mankind. As the
individual perceives order in his universe, he also perceives order in the language to which he is exposed. The hearing child's need for order and structure is satisfied through the process of learning the language, discovering its rules. Deaf children do not receive enough clear, unambiguous language to determine through example the rules of English. Thus to satisfy their need for order and structure in language, deaf children develop their own syntax, or language system—often derided by educators as "Deaf English".

What some linguists have labeled as a "language freeze"—this aberrant self-created language—and a result of immaturity is actually a "language birth". Although not English, the deaf child's language output satisfies his need for system, syntax, and structure in order to communicate. The individual deaf child creates his own language based on his individual cultural and language experience. The hearing child generally has a language experience similar to that of the majority of people in his culture; thus he acquires through deductive learning the syntax of the majority. But English for the deaf child becomes a second language, while his own self-made language remains his primary means of communicating. "My nose is maple syruping" is actually the result of a creative child's communicating through language with his mother. Schools fail because they cannot teach as fast as the children can learn. Children learn language outside the classroom too. What they learn they bring to the classroom and subtly impose it on what the teacher presents to them. Their instinctual need to communicate produces a form of language that competes with English as a language.

The deaf child in school is constantly reminded of the "other way" to communicate; he is made aware of English not only in the classroom, but wherever he goes, English is there as the language of the culture. The deaf child who develops a language does not need English to communicate to the extent that he is taught it in the classroom. His need does not grow because he is protected by a sheltered environment in home and school. Hearing children have a constantly expanding linguistic environment, through radio, TV, movies, the theater, the printed word, and most of all other people they come in contact with. Such an expanding environment early in the hearing child's life imposes linguistic rules and an unconscious understanding that the culture at large dictates the language to be used. Young deaf children do not have an expanding linguistic environment, and therefore have neither the syntax of English nor the unconscious understanding that the culture at large does dictate the language.
Most deaf children learn to read and write a little bit in preschool. They learn to read their names and the sentences which note the daily schedule: "We will go to Art." "Mr. Palmer will come today." "We will go to gym today." When the activities are finished, the sentences are changed: "We went to Art." "Mr. Palmer came today." "We went to gym today." Day in and day out, the schedule repeats itself, the sentences keep coming, but the environment does not expand. Every ingenious device, game, toy, activity, and instructional system has been tried and will be tried again. But nothing works. The teacher cannot compete with the live, real, gut-level communication, the signs, words, gestures, grimaces, fingerwaves, feignings, that go on between the children. In a few years the child will be sign-talking without regard for the rules and the structures of English, without regard for the carefully patterned sentences that so clearly delineated the days' schedule a few years back. The volume of language received from the teacher through teaching is minimal compared to the volume of language received from other students communicating. Therefore the learning of language becomes a game. The language with the most input wins the affections and the attention of the pupils. The winning language becomes the language of the children themselves, not because human beings have a propensity for one form of language or another, but simply because the language which is presented as the most common and the most usable becomes the language of the community.

If any change is to come in the results of the education of the deaf, contacts in acceptable English must outnumber the contacts children have with other forms of language from other students. Obviously schools cannot and should not prohibit contact among students. They can and should increase the number of meaningful contacts between student and teacher in acceptable English. The more closely the linguistic experience and environment of deaf children approximates that of hearing children, the more likely that deaf children will use English as their own language. Such a language experience and environment must provide the deaf child with the opportunity to learn English through a great volume of exposure to syntactically consistent and semantically meaningful verbal communications. The most likely medium for that is some form of Manual English or signed English (see The Linguistic Reporter, 12, 2, April 1970). Signed English accepts the fundamental characteristics of sign language, and imposes English word order and tenses on Sign in a
somewhat artificial manner. Signed English is a tool for communicating the substance of life, culture, personal feelings, and interactions; it is not a tool to teach English. It may be a tool through which deaf children will learn English. Deaf children will learn to use English as they experience English through communication. Teachers of deaf children must teach; in fact, they have more to teach than do teachers of hearing children. But they should not begin by teaching language. Deaf children come to school with little knowledge of the world around them and almost no understanding, conception, or inkling of the world removed from them. Polar bears and Indians, science and sewing, and a million more things and ideas are raw material for teaching.

Language becomes an important device in teaching what hearing children have been taught at home through communication. In the process of being taught at home, and later at school, hearing children learn language, the English language, in order to understand, control, manipulate, and change their environment. Language is a tool for hearing children, but it is never an end in itself. Mothers correct and verbalize for their children, but only in the context of a message unrelated to language learning itself. Children repeat the corrected or uncorrected pattern, still bearing in mind the original message. Language (English) is a by-product of communication between children and adults and among children themselves. Through communication the hearing child is socialized, learns the culture, is taught the limits of behavior, the range of expectations, the chances of success, the consequences of failure, and ad infinitum.

Culture is the substance of the communication. Language provides the commonalty to experiences which later make it possible for children to meet new people without a great deal of fear, to shop and know what to expect from clerks—even to know what to say about the loss of a loved one. Language is the most important socialization process. Institutions, primary groups, society depend on language for transmitting their content to their individual members. Without language the individual member stands apart from his culture, because he lacks the experiences which socialize the individual. English, reading, taxes, contracts, and the unrelated concepts of speed, independence, wealth, and sacrifice are culturally bound. Those who are not in some degree part of the culture cannot read. Deaf children cannot read because they are in a cultural limbo. They are not members of their parents' culture, nor is there a culture which they can easily join. Reading is not looking for facts on a page, or
finding antecedents. The printed word is a verbal cue to thinking. Unless the reader knows
the culture of that particular language he cannot read, because the printed word is an
expression of that culture. Deaf children cannot and do not read because they are not
socialized into their culture, and consequently they do not have the command of English
necessary for reading.

Human beings communicate to satisfy needs. In the process of communicating they learn the
language of their culture, which becomes an efficient system for satisfying present and
future needs and wants. The language and the culture are both so complex and full of
nuances that rote memory cannot serve the individual effectively. Deaf children are taught
language in a very artificial, rote way. "Sally run." "What did Sally do?" "Sally ran." is
good English but extremely poor communication. In the context of the classroom the
sentences are void of content and message. The deaf child must memorize the structure, the
syntax, and the grammar because there are no message clues to help him learn the language.
The language that is taught is non-functional because it does not communicate anything
tangible; there is nothing in it that the child can take hold of and use, and in doing so learn
language for future use. The language of the classroom does not communicate, and therefore
it cannot be learned as a language. On the other hand, language that does communicate is
learned. Learned not on the first, second, third, or even, fortieth time, perhaps, but
eventually learned because it is purposeful, because it satisfies a need and therefore becomes
a tool.

The child learns language because the experiences which were language based communicate
something that depended on language. Such experiences become frames of reference. Such
experiences become sources of conceptual understanding and models for language use. "The
superintendent is driving fast" implies more than just action and velocity. "The horse is
running fast" likewise tells more than just whether the horse is moving. The superintendent
is probably going faster than the horse, but is wrong in doing so. The horse is probably
going faster than all of the other horses, and thus is loved by the track fans for doing so.
Such values, judgments, and opinions cannot be taught; they must be learned. The child who
has not learned the values, judgments, and opinions of his culture surely cannot understand
them when they are presented in the printed word.
A frame of reference is built slowly through many unplanned experiences and without regard for quality. Frames of reference are created even though the child has many conflicting and contradictory experiences. "Fast" is not simply a description of velocity but an opinion about speed and its appropriateness. Deaf children must have experiences wherein other people around them communicate not only a description of the moment but also their feelings, opinions, and values relating to that experience.

Communication becomes the creator of a wealth of attitudes and opinions that help growing children understand the culture as well as learn the patterns of the language. When the child refers back to an experience, he does not recall the rote memory work of the classroom, but rather the message that was communicated through the language of the experience, and in the process he recalls the language pattern. Deaf children must be given language simultaneous with their experiences, not because language necessarily helps them understand the experience, but simply because it is a cultural imperative that language be part of the experience. The best thing formal education could do for deaf children is to stop trying to make them into sentence remembering machines--that won't work--and begin letting them learn language as they learn about themselves and the world through communicating with others.

References
Goldin-Meadow, Susan, & Heidi Feldman

The Linguistic Reporter
1970 CAL Conference on Sign Language (W.C. Stokoe) Quotes O'Rourke's distinction of five modes: (1) Sign Language, (2) Signed English, (3) Simultaneous Method, (4) Fingerspelling, (5) Manual English. Vol 12, No.2, April, 5-8. This valuable discussion was distributed by and may still be available from the National Association of the Deaf.

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**DEVELOPMENT OF LANGUAGE IN PROFOUNDLY DEAF CHILDREN THROUGH THE MEDIUM OF MANUAL SIGNS**

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**Purpose.**
An investigation in progress seeks to define the role of manual sign language, in particular the role of "signed English" in the development of language and communication in profoundly deaf children. The term "development" used here refers both to the spontaneous process of language acquisition and to possible approaches to remediation. The dual aspect of language being investigated is syntactic and semantic structure. The immediate object of the research is to investigate the effect of the Paget-Gorman Sign System (PGSS), which claims to provide a one-to-one correspondence with English sentence structure, on the development of receptive and expressive language in two groups of profoundly deaf children--one group without additional disabilities and the other with multiple handicaps. It is proposed to examine the effectiveness of the PGSS, both as a medium of communication and as an aid to the development of English sentence structure, with these two groups of children; and the object of the research is to provide answers to the following related questions:

1. Can the basic syntactic structures and interpersonal functions of English be acquired through the medium of the PGSS?

2. Are there fundamental differences between auditory vocal and visual-manual modes of communication which will inevitably impede the acquisition of signed English?

3. If there are such differences can their effects be reduced by the adoption of specific
teaching procedures?

4. Can effective manual communication be established in deaf children whose additional disabilities preclude the development of speech or the comprehension of speech?

**Background.**
An increasing acknowledgment of the failure of "pure" oral methods in teaching the deaf has recently led to a renewed interest in manual communication. A number of research findings have consistently claimed that the early manual communication to which deaf children of deaf parents are exposed is advantageous to their later linguistic and educational achievement (e.g. Stuckless and Birch 1966; Vernon and Koh 1970). Although such claims are open to the criticism that the basis of this advantage may lie in the more relaxed attitude of deaf parents to the condition of deafness, and not in early manual communication per se, similarly favorable results are being found by Moores (1974) in a longitudinal study which attempts to compare the relative efficacy of oral only and oral-plus-manual methods with deaf children of hearing parents. The manual methods which Moores is studying involve either fingerspelling only or "total communication" approaches, which include both fingerspelling and signs. Manual methods involving signs only have been actively discouraged by those responsible for the education of deaf children, partly on the grounds that the use of signs would hinder the development of spoken language, but also because of their belief that the spoken language could not adequately be translated into the medium of sign. In both Britain and the U. S. A. there have been sustained attempts to devise manual sign systems which permit a one-to-one correspondence with fully grammatical sentences of English, thereby overcoming the objection that sign language bears little relation to spoken language. In the U. S. A. systems of "signed English" have been developed by Anthony (1971) and by Gustason, Pfetzinger, and Zwalkow (1972), although so far there appear to be no reports on their use. In Britain increasing interest is being shown in the PGSS (revised 1972), although apart from the present investigation no systematic study has been made of the use of this system, despite the encouragement given by the Lewis Report (1968) for such a study.

The PGSS is essentially a dictionary of 2,500 signs for corresponding English words, including signs for tenses, auxiliaries, plurals, and several other bound morphemes (e.g. -er.
ly), which make possible signing grammatically almost any sentence one might wish to use with a child. The idea of signing grammatical English has resulted in some lessening of hostility towards manual communication, and the PGSS is being used increasingly in schools and in special units for deaf and language impaired children, and in particular with deaf children additionally handicapped. There are, however, linguistic and psychological considerations implicit in the system which require careful examination before widespread encouragement is given to the use of either the PGSS or any other form of signed English. The belief among those who are advocating the use of the PGSS with young deaf children is that adequate presentation of signed English should result in the acquisition of normal English syntax in a manner parallel to that whereby a hearing child acquires syntax. Such a belief may well prove to be misguided, for it assumes that a simple parallel can be drawn between an auditory-vocal and a visual-manual mode of communication, and it ignores the possible implications of the differences between the two media. One obvious such difference concerns the time required for the expression of a signed sentence as compared with its spoken equivalent and the possible effect of this on memory and therefore on sentence organization. Topic-comment ordering has been noted as a feature of both deaf sign language (Woodward 1972) and Indian sign language (Kroeber 1958). Woodward observes that the simultaneity of expression which is a feature of American Sign Language is only characteristic of short sentences; in longer sentences the preferred order is topic-comment; and Kroeber suggests that whereas in the more rapid medium of speech the memory span easily retains several associated units and their order is therefore less important, the clarity and interpretation of the slower medium of sign is assisted if the sentence topic is stated at the outset and the supporting context built up secondarily. The sentence "topic" is a subjective semantic choice or interpretation which in spoken language is accompanied by some formal syntactic device such as word order or inflection. Where there is no such conventional syntactic device, problems could well arise in the interpretation of potentially ambiguous subject-object and similar word-order relations. This was exactly the situation which I. M. Schlesinger (1971) found in his study of Israeli Sign Language: The deaf subjects in his study were unable to communicate to one another such distinctions as "the black dog is biting the white dog" and "the white dog is biting the black dog". In a study of the temporal differences between speech and signs (ASL), Bellugi and Fischer (1972) found that the rate of articulation for spoken words is considerably higher than that of articulation for signs. They discuss some of the mechanisms by which signs
compensate for this limitation, and these include the elimination of redundancy, incorporation (i.e. variation in the spatial configuration or movement of the hands to introduce the modification of number, location, manner, or attribution), and bodily movement and facial expression. The importance of facial expression is emphasized more strongly by Stokoe (1972), who argues that unlike speech, ASL is essentially a dual channel activity composed of a manual and a facial component. According to Stokoe, the importance and function of the facial component results in an inevitable incongruence between the sentence systems of ASL and those of other, spoken languages. Bellugi and Fischer interpret these characteristics of ASL as a means of economizing on time, whereas Stokoe sees them as an exploitation of the available dimensions of space. Either way, according to Stokoe (1972:90) ...the sight, shape, and sense systems of sign language seem to be just similar enough, yet enough different, to cause maximum difficulty, . . . for the person learning English as a second language.

The main conclusion to be drawn from these studies is that ASL is not merely a manual medium in which strings of formatives are produced in linear sequence. It is a multi-dimensional system adapted to the requirements of a visual manual modality, and it does not permit any simple one-to-one correspondence with the morphemic sequences of the spoken language. It is just because direct translation of the spoken language into existing sign systems of the deaf is not possible that new systems of "signed English" have been devised. There is no reason to suppose that such systems could not be used as a second language by educated adult signers, many of whom already employ a form of manual English which relies on a mixture of signs and fingerspelling. What is to be questioned is whether the structure of the spoken language can be acquired (i.e. learned as a first language is learned) through such a system, or whether the kinds of features which characterize ASL will be found to dominate the acquisition process. For example, it is possible that the additional time required for the expression of a signed sentence may exceed the visual attention and memory span of the very young child, thereby necessitating some form of economy of presentation to facilitate comprehension. It is also possible that the child will himself seek a more rapid means of expression and will spontaneously exploit the spatial and simultaneous possibilities of a signing medium, thereby perhaps introducing for himself
the kind of negative interference which will inhibit his acquisition of English as a first language.

It was considerations such as these which formed the background to the present research which has been in progress for two years. The original investigation was planned as an exploratory study based on developmental case studies (Fenn 1975), and two groups of profoundly deaf children with whom the PGSS was in use were selected for observation.

First a group of young typical deaf children was selected of at least average intelligence and with no additional handicaps, whose teachers and parents were attempting to sign grammatical English using the PGSS. In addition to seeking evidence of the success of the PGSS with this group, much of the interest also centers on the manner and extent to which the children's use of the system will deviate from that with which they are presented, and in particular whether the growth and character of their expression will increasingly approximate to the forms of the spoken language, or whether it will progressively assume the character of an independent sign language. It was considered insufficient to confine the study to typical deaf children, since together with the use of the PGSS there is of course a very strong emphasis on speech development and auditory training with the children selected. As a further and stricter test of the efficacy of the PGSS, it was therefore decided to select a second group of children whose additional handicaps were considered to preclude any realistic hope of the development either of speech or the comprehension of speech whether through hearing or lipreading and with whom the PGSS was being used as the sole medium of language development. The children in this group were profoundly deaf, subnormal and cerebral palsied, in most cases severely athetoid; thus whatever results are ultimately achieved with these children will have been achieved independently of any auditory or articulatory involvement. This claim, made in support of the results achieved so far, was unhesitatingly verified in July 1975 by the Cambridgeshire regional audiology service and by a consultant not from Addenbrooke's Hospital, Mr. G. Mann. A further reason for the inclusion of this group in the study was to examine how far effective communication could be established in deaf children with additional handicaps; and because of the
exceptional severity of disability in the present group, their achievements should offer a minimum standard for the much larger group of deaf children with additional but less severe disabilities. A controlled language program based on "telegraphic" structure is in operation with this second group. The construction of this program is related to this writer's previous work (Fenn 1972; and in press) which found that a highly controlled presentation of linguistic material facilitated the development of syntax in severely subnormal children. Although the program was initiated because of the limited ability of the children, it is relevant to the present context, because unlike the methods in use with the typical deaf children, it is attempting to anticipate and avoid certain difficulties believed to be inherent in the use of the PGSS.

The procedures which have been adopted so far in the present study and the preliminary findings are described in Fenn and Rowe (1975). Two years is a very short period of time for a study of this kind, especially when this period has included the training of the teachers in the use of the sign system, and the preliminary data vary from the highly encouraging to the chaotic. The most encouraging observations concern the growth of communication which in several of the children has been truly impressive. Whatever the final conclusion may be on the success of the PGSS as a medium of signed English, its potential as a medium of early communication should not be overlooked. Not only because of the emotional and social advantages which this may reasonably be supposed to offer, but also because of its potential as an aid to cognitive development. For it is already apparent that the PGSS can offer a means of indirect learning through language; i. e. it can free the deaf child from his dependence on his own direct experience and allow him to acquire information from others. This could have considerable influence on the development of the cognitive background necessary for eventual success in reading. Discussion of reading failure in deaf children usually centers in perceptual and restricted language issues; but cognitive range and understanding is an equally vital prerequisite for successful reading, and early manual communication may prove an invaluable tool in fostering the cognitive basis of reading. Although the present study is necessarily restricted to a much smaller area of focus, its
potential implications for these wider issues should not be disregarded.

The data obtained so far are inconclusive in regard to whether English may be acquired through the medium of the PGSS, and this is only to be expected given the relatively short time the investigation has been in progress. For the most part the early data has revealed little in the way of syntactic regularity, even though the children's meaning has usually been clear. In this particular context the performance of the typical deaf children has not been noticeably superior to that of the children with multiple handicaps, and it is probable that the controlled language program is assisting the latter group in this respect. There are indications that if the PGSS is to be used successfully with more severely handicapped children, it may be necessary to introduce modifications in its presentation (at least in the early stages) which recognize certain requirements of a visual medium, but which are not features of normal language acquisition via an auditory modality. There are also indications that the typical deaf children are beginning to exploit certain structural features of the PGSS in a manner comparable to that discussed earlier and as a form of mime; though it is quite possible that this is only an intermediate stage. In a study of the use of speech and signs in deaf children, Tervoort (1967) comments that the use of mime among the children in his sample was only characteristic of the youngest children, i.e. the 7-8 year olds. The oldest of the typical deaf children in the present study are still only six years of age, and there is no reason to suppose that they will not progress to a more adult form of expression. It is much too early to form any conclusions as to the potential of the PGSS in this context, and the object of the present investigation is to pursue these issues to a point where conclusions can be reached.

Plan of investigation.

Two groups of children have been established. The first consists of eight boys and girls aged from 4 to 6 years and of at least average intelligence, all pupils at Stoneleigh School for the
Deaf, Leicester. (It is intended to include more children in this group in the assessment of comprehension but not in the assessment of expression.) These children are all profoundly deaf but have no additional handicaps. The second group consists of six boys aged from 10 to 12 years, at Meldreth Manor School (Spastics Society), Cambridgeshire. These boys are of subnormal intelligence (ESN/SSN borderline) and all manifest some form of cerebral palsy—in most cases severe athetosis. Four have been assessed as profoundly deaf and two are partially hearing but have no comprehension for speech. Written permission to carry out the proposed study has been obtained from the appropriate authorities, and from the children's parents.

It is intended to carry out regular assessments of the linguistic progress of these children through the medium of the PGSS (of which the writer has a fluent knowledge), and the development of both comprehension and expression will be assessed. The test of comprehension employed so far has been the Hosbaum and Mittler (1971) Sentence Comprehension Test. In this test the child is presented with a sentence and is required to select the appropriate picture from a choice of four systematically varied alternatives. Altogether there are fifteen subtests which attempt to assess comprehension for a wide range of different types of sentence. Although this test requires the child to process an entire sequence, the early items are tests of lexical rather than syntactic understanding; i.e. the child is not required to distinguish sentences of the type "the dog is chasing the cat" and "the cat is chasing the dog". Word order relations of this type have been found to present a special problem in sign language (Schlesinger 1971), and it is intended to devise additional tests of prepositional, subject-object, and direct-object/indirect-object relations, as well as of pronominal reference, all of which rely on syntactic knowledge and require an understanding of temporal ordering. It is proposed to use the Sentence Comprehension Test as a model for the development of a more extensive comprehension test, and to devise a more satisfactory scoring procedure which would allow the results to be quantified. It is intended to develop the test so as to permit comparison of results at different age levels and for different modes of presentation, i.e. speech with signs, speech only, and reading. The extent to which the use of the PGSS can be shown to facilitate the development of reading ability is obviously of great importance, and although any general assessment of the growth
of reading ability is beyond the scope of the present project, it is intended to provide information on the children's ability to comprehend in written form basic sentence relations and a variety of syntactic structures which would be prerequisite to the comprehension of a simple text. The results of the comprehension assessment will be presented in a quantified form which will permit comparison with other groups of deaf children.

Expressive language will be assessed by means of videotape recordings of spontaneous signing obtained at regular intervals in conversational settings. A considerable amount of time will necessarily be spent on the transcription and analysis of these tapes. It has been found that approximately ten hours are required to transcribe one hour of tape, and that the nature of the data demands specialized knowledge and training. The analysis of the expressive data will seek to evaluate the PGSS both as a medium of signed English and as a medium of communication. If the system is to be judged successful in assisting the acquisition of English there should be evidence that the children's utterances are progressing towards the surface form of the standard language, and it should be possible to extend the limited form of semantic analysis employed so far into a detailed syntactic profile, and to determine the range and degree of syntactic flexibility available to the children. It should also be possible to analyze the greater part of the data in this way, and thus to measure and compare the growth of expressive ability at different points in time. A major point of inquiry will be whether the potential features of a visual-manual modality discussed earlier will exert a pull away from the temporal sequencing of the children's expression, or whether the conventional ordering of the speech-with-sign input will dominate. A second major point of interest will be the extent to which the typical deaf children increasingly substitute speech for signs. Quantification of the data will be undertaken with regard to individual progress and change, and a more general qualitative analysis will also be undertaken. Particular attention will be paid to the growth of wider communicative ability, for although as a result of specific teaching a child might be able to produce fully grammatical (and potentially high scoring) sentences of English in response to, e.g., a picture, this is no guarantee that the child has mastered the "interpersonal functions" of language (Halliday 1970) and can employ statements, questions, and imperatives in social exchange. On the other hand, the PGSS might facilitate the achievement of a high level of communicative ability which
nonetheless failed to lead to the acquisition of English. Potential differences of this kind will be recognized in both recording and analyzing the excessive data.

References

Anthony, David A.


Bellugi, Ursula, & S. Fischer


Fenn, Gillian

1975 The Development of Language through Signing in Children with Severe Auditory Impairments (Final report to the Social Science Research Council, Grant HR 2557, 1974-75, London).


Fenn, Gillian, & J. Rowe


Gustason, Gerilee, D. Pfetzinger, & E. Zawolokow

1972 Signing Exact English (Rossmoor CA: Modern Signs Press).

Halliday, M. A. K.


Hosbaum, A., & P. Mittler

1971 Sentence Comprehension Test (Experimental edition, Hester Adrian Research Centre, University of Manchester)

Kroeber, A. L.


Lewis, M. M.


Moores, Donald F.

Paget, Grace, & P. Gorman


Schlesinger, I. M.


Stokoe, William C.

1972 *Semiotics and Human Sign Languages* (The Hague: Mout)

Stuckless, Ross, & Birch, J.

Tervoort, Bernard, & Verbeek, A.


Vernon, McCay, & S. Koh


Woodward, James C.


Gillian Fenn, a member of the Department of Education, The University of Cambridge, holds a doctorate, a (competitive) Research Fellowship in Clare Hall, Cambridge, and a research grant from the Medical Research Council. She will be examining closely the
research questions addressed in this paper during the next two or three years

ORDER CONSTRAINTS IN AMERICAN SIGN LANGUAGE:
THE EFFECTS OF STRUCTURE ON JUDGEMENTS OF MEANINGFULNESS AND ON IMMEDIATE RECALL OF ANOMOLOUS SIGN SEQUENCES

Harry W. Hoemann and Vicki A. Florian

Abstract.

Forty anomalous sign sequences were ranked as to their meaningfulness by three judges working independently, and the same forty sequences were presented to seventeen deaf subjects via videotape in a task measuring immediate recall. Half of the sequences preserved the structure of original model ASL sequences and half of the sequences were the result of a random reordering of the original sign sequence. Twenty of the sentences were five signs long and twenty were six signs long. Random resequencing of the signs affected judgments of meaningfulness in both five- and six-sign sequences, and resequencing of the six-sign sequences affected both meaningfulness and immediate recall. It was concluded that order constraints are present in American Sign Language and that the sequence of signs may affect both semantic features and psychological processing of signed messages.
Introduction.

Compared to English, American Sign Language (ASL) seems to be relatively free from order constraints. Distinctions between direct object and indirect object, for example, are made in ASL by assigning to the referents positions relative to the signer and by executing the sign verb in a direction which takes their positions into account. Temporal relations and durations are also represented spatially, and the boundaries between phrases and clauses are sometimes marked by orienting the body toward points in space around the signer that have been assigned specific referential significance. A major source of structure in ASL, it seems, is derived from the spatial organization of signs relative to the signer and to each other (Friedman 1975).

Spatial organization, however, does not account for all of the structural properties of ASL. Temporal patterning also plays a role, and facial expressions and body stance may contribute to ASL structure with or without spatial referencing as a concurrent feature. Even pauses are sometimes crucial since they may help to distinguish conditional from temporal clauses and they may support spatial organization of sign sequences with some redundancy.

Whether order constraints are also an important source of structure in ASL is less clear. While it is noteworthy that ASL often follows what has come to be known as "narrative order" (that is, the sequence of signs in a narrative generally follows the temporal sequence of the events they reference), this is not a clear example of order constraints operating as a grammatical feature of the language, since the order is imposed from without by semantic constraints. For a demonstration of order constraints in ASL to be convincing, the effects of sign sequence on the meaning or on the grammaticality of a statement would have to be observed in a linguistic context where the sequence of the signs was not influenced by the
sequence of the events to which they referred.

The opinion has been advanced that there are no order constraints at all in ASL (Fusfeld 1958) and that any and all permutations of a sequence of five signs YOU ME DOWNTOWN MOVIE FUN, Tervoort 1968) are equally grammatical.

Tervoort (1968) proposed to discover whether any syntactic rules of grouping might limit freedom of order in ASL. His informants, graduate students at Gallaudet College, were asked to inspect all 120 permutations of the sentence YOU ME DOWNTOWN MOVIE FUN, and to report whether they considered any of the resulting sequences to be ambiguous. His operational definition of an ungrammatical sequence was one which "remained ambiguous to everyone" (1968: 459). It is unclear why Tervoort adopted such a strict criterion for considering a sequence to be ungrammatical. It seems to us to be at least as defensible to consider any loss or change of meaning to constitute evidence of a departure from grammaticalness, and, in fact, Tervoort reported that some of the resulting permutations were judged to be more ambiguous than others. Ambiguous sequences were especially likely when the subject of the sentence YOU/ME) and the predicate (DOWNTOWN MOVIE FUN) were interpenetrated, as in YOU DOWNTOWN MOVIE ME FUN or DOWNTOWN ME MOVIE FUN YOU.

Following Coleman (1965) and Danks and Glucksberg (1970), we consider grammaticalness to be a matter of degree rather than an all-or-none proposition. We, therefore, consider Tervoort's results to support the conclusion that changes in order may affect both the meaning and the grammaticalness of ASL sequences of signs.

In a pilot study of the role of order constraints in ASL (Hoemann & Florian 1975),
informants judged random sequences of signs to be less grammatical than sequences which preserved some or all of the structure of original model ASL sentences. The present study explores the role of order constraints in ASL by assessing the effects of structure on: (a) judgments of meaningfulness, and (b) immediate recall of anomalous ASL sequences of signs. If order constraints are present in ASL, disruption of the sequence of signs ought to have an adverse effect on one's ability to recall the signs in their presented order. Such results would constitute evidence that order constraints are present in ASL and contribute to its grammatical structure.

**Materials and Design.**

Twenty ASL sequences were selected from a corpus of ASL translations of English prose prepared with the help of informants as instructional materials (Hoemann 1976). Ten of the sequences were five signs in length and ten were six signs in length. The form class of each sign was identified in the twenty model sequences and other signs of the same form class were substituted randomly in each sequence from a common pool of signs so as to generate sequences that were semantically anomalous. An example of a six-sign model sequence is DAILY RAIN TRULY BORING WISH CLEAR. The anomalous sequence resulting from the substitution was ALWAYS ROCK VERY DRY CAN PLEASANT.

The resulting 20 anomalous sequences were subjected to a random resequencing of the signs comprising each sequence, yielding 40 sequences in all -- 20 structured like the models and 20 comprised of a random resequence of the same signs. The random sequence of the previous example was VERY ALWAYS ROCK CAN DRY PLEASANT. The judgments of meaningfulness were made by three hearing adults who were communicatively competent in
American Sign Language.

Subjects.

Seventeen deaf undergraduate students enrolled at Gallaudet College, Washington, D.C., were recruited as paid volunteers in the test of immediate recall for the anomalous sequences of signs. Eleven of the subjects reported that they had known ASL for at least eighteen years and four reported that they had known ASL for at least four years. The sex division was approximately equal. Hearing losses were severe to profound.

Procedure.

For the judgments of meaningfulness, the 40 stimulus sequences were recorded as a literal English gloss on 40 index cards. Three judges working independently ranked the sequences 1 through 40 in order of meaningfulness.

For the test of immediate recall, the 40 sequences were recorded on videotape in a random trial order with a pause of 8 to 10 seconds between each sequence. The sequences were signed "dead pan" to minimize the effects of facial and body cues. This is a questionable procedure for Sign Language research generally, since facial and body cues undoubtedly play an important role in the transmission of ASL messages. However, it was the purpose of this study to determine whether the sequence of the signs contributed to the structuring of an ASL message. Consequently, other possible sources of structure, especially facial expression, body orientation, and other localization strategies were eliminated as much as
possible. A separate recording was made of the reverse trial sequence.

Subjects were tested individually. Videotaped instructions informed the subjects that they were about to see some ASL "sentences" whose meaning would be unclear and that they were to repeat each sentence after they had seen it exactly as it had been presented. The instructions and test materials were shown on a 21 in. TV monitor. The subjects were seated about 5 feet from the screen. The test session lasted 15 minutes. The subjects' performances were recorded on videotape and they were later transcribed into a literal, annotated English gloss for scoring.

Initialized signs in subjects' responses (e.g. WE signed with the right "W" instead of the right index finger) were treated as dialect variants and counted as correct.

Three alternatives were considered as a possible dependent variable for scoring the data: (1) a perfect repetition of the entire sequence, (2) total number of signs correct, and (3) a point score which awarded 1 point for each pair of adjacent signs repeated in the same sequence.

The first alternative was rejected because too many responses would thereby be excluded from analysis. Only 19.4% of the sequences were repeated correctly in their entirety by all of the subjects combined. The second alternative was considered to be desirable because of its simplicity; however, it failed to reflect the importance in the rationale of the present study that was attached to the sequence of the signs. If subjects resequenced the signs mentally in order to produce a more meaningful sequence, such a strategy might obscure the effect of structure in the stimulus sequence, yet a "signs correct" dependent variable would count such responses as correct whenever the strategy was successful. The third alternative was judged to be most appropriate. In the end, both the second and the third scoring methods
were used, and they yielded identical conclusions. The results reported below as mean point scores are based on the third method.

Results.

The agreement among the three judges as to the relative meaningfulness of the sign sequences was evaluated by means of Kendall's Coefficient of Concordance and found to be moderately high ($W = .6763$). The significance of Kendall's $W$ is testable ($X^2 = m[N - 1]W$, where $m$ = the number of judges, $N$ = the number of observations, and $W$ = the Coefficient of Concordance; there are $N - 1$ degrees of freedom). In the present case, the result was significant ($X^2 = 79.12$, $df = 39$, $< .01$). Apparently, the task of ranking the anomalous sequences used in the present study in order of meaningfulness was not overly difficult, and there was considerable consensus among the judges.

Once the relative meaningfulness of the sentences had been ascertained, the effect of resequencing on meaningfulness could be evaluated. Twenty sequences preserved the grammatical structure of original model ASL sequences and each of these was randomly reordered to form a new random sequence of the same signs. Each structured sequence, therefore, was paired with an "unstructured" random resequence, and the meaningfulness of the structured sequence of each pair could be compared with the meaningfulness of the randomly resequenced order of the same signs.

Of the 20 sequence pairs, 15 randomly resequenced orders were judged to be less meaningful than the original order, four randomly resequenced orders were judged to be more meaningful than the original order, and there was one tie. The difference between structured and resequenced orders on the dimension of meaningfulness was evaluated by
means of a Wilcoxon Signed Ranks Test and found to be significant (T = 29.5, N = 19, p < .01). Thus, even in sign sequences whose meaning is relatively anomalous to begin with, a random reordering of the sign sequence tends to disrupt meaning further and to render the result less interpretable.

Mean point scores earned in the immediate recall task by subjects responding to structured and unstructured (resequenced) sign sequences are reported in Table 1. Statistical tests on the differences between performances for the structured and unstructured sequences were carried out separately for the five-sign and for the six-sign sequences since both scoring criteria, signs correct and points for the adjacent signs correct, introduced a bias favoring the longer sequences. Moreover, different vocabularies were, of necessity, used for making the anomalous six-sign sequences than were used for the five-sign sequences; consequently, a vocabulary effect was an unavoidable confounding variable with length.

In the five-sign sequences, there was no significant difference between recall for the structured and unstructured sequences. In fact, half of the differences in mean point scores were in the opposite direction from that which was predicted; that is, in half the trials, the unstructured sequences yielded better recall scores than the sequences structured like the original models. The resulting t test between recall scores for structured and unstructured sequences was, of course, not significant (t = .494, df = 9, p > .05).

In the six-sign sequences, recall for the structured sequences was significantly better than recall for the unstructured sequences (t = 3.74, df = 9, p < .01). All of the differences were in the predicted direction.

The relation between meaningfulness and recall was evaluated by calculating Spearman rho.
correlation coefficients between the mean ranks assigned to the sequences on the basis of their meaningfulness and the ranks assigned on the basis of mean point recall scores earned by the 17 deaf subjects. In the light of the previous outcome, which found six-sign but not five-sign sequences to reflect the effect of structure on short-term memory, the correlation coefficients were calculated separately for five-sign and six-sign sequences. The correlations were moderate:

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<th>Pair Number</th>
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**Six-Sign Sequences**

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**TABLE 1. MEAN RECALL SCORES**
\(\rho = .35\) for five-sign sequences and \(\rho = .49\) for six-sign sequences. Clearly, short-term memory for sign sequences is sensitive to the effects of meaningfulness. In the present study, the effects of resequencing on the meaningfulness of the resequenced product seems to have accounted for some of the variance in the mean Point scores.

**Discussion.**

We consider this investigation to constitute a replication and extension of Tervoort's results, but with opposite conclusions. Like Tervoort, we found that changes in the sequence of signs may have an effect on the meaning of the sign sequence. Specifically, randomly resequencing a structured sequence of signs tends to produce a less meaningful sequence than the original. We were able to demonstrate this as a reliable outcome for a larger number of sequences than Tervoort considered and for sequences that were relatively anomalous to begin with. Tervoort had reported that resequencing the signs of a single, five-sign meaningful sentence (YOU ME DOWNTOWN MOVIE FUN ) sometimes rendered the meaning ambiguous, but did not produce a result that was judged by the majority of his subjects to be ungrammatical. It seems to us that Tervoort's operational definition of ungrammaticalness obscures an important effect that order constraints were producing in his model sentence. If a change in order reliably changes the meaning of a statement, then the hypothesis is in order that sequence plays a role in organizing the vocabulary of the statement so as to have it mean what it does. Such organization is apparent in English. For example, I SHOWED THE CRIMINAL THE POLICEMAN means something very different from I SHOWED THE POLICEMAN THE CRIMINAL. By the same token, YOU ME DOWNTOWN MOVIE FUN means something different from YOU DOWNTOWN ME MOVIE FUN.

It seems to us in retrospect that it was rather risky for Tervoort to base his conclusions regarding the role of order constraints in ASL on a single short sentence. If the choice of
vocabulary for linguistic stimuli is often a problem, generating effects that are confounded with other variables, then the very least that one should do is to use as large a corpus as is tolerable so as to have a larger number of instances in which to observe the effects of the variables in question. In the present study, for example, the variability in recall scores reported in Table 1 is considerable, ranging from 82 to 3.41 for five-sign sequences and from .47 to 2.76 for six-sign sequences. Our matched pairs design effectively controlled for specific vocabulary effects in the comparison of structured vs. unstructured sequences; it was only in cases a comparison was desired between sequences of different lengths that the confounding effect of different vocabularies would be unavoidable. Nevertheless, it is apparent that there were large differences in performance from one sign sequence to another, and these effects are not easy to place under experimental control.

Part of the difficulty with interpreting Tervoort's data is that informants' judgments of meaningfulness and grammaticalness were reported without validation from behavioral data which might have made such judgments psychologically meaningful. Our attempt to validate judgments of meaningfulness with immediate recall was at least partially successful; the six-sign sequences, which showed a moderately high correlation between meaningfulness and immediate recall, also yielded significantly different performances in the recall of structured vs. unstructured sequences.

The failure of the five-sign sequences to yield similar results was not easy to explain. With only two exceptions in each case, both five-sign and six-sign sequences were judged to be less meaningful when randomly resequenced. Nevertheless, only the six-sign sequences were reliably more difficult to recall when randomly resequenced. It may be the case that the effect of structure on immediate recall was masked by the reduced difficulty of five-sign versus six-sign sequences. If short-term memory for sign sequences is less sensitive to the effects of structure when task difficulty is reduced, this would suggest that its utility as a dependent variable to measure the effects of structure in linguistic stimuli may be somewhat limited. On the other hand, the present results may have been a function of the choice of vocabularies used in the five-sign sequences or of differences between sequence pairs that
random resequencing did not effectively control. Finally, short sequences may be less easily disrupted by random resequencing than longer sequences.

Another limitation of behavioral measures of the structure of ASL is that there is no way to insure that the response is due solely to structural features of ASL. In the present study, the subjects' recall of ASL sequences cannot be considered apart from their probable knowledge of English. An intimate relation between ASL and English is established individually for deaf people as they acquire competence in each language concurrently. Moreover, ASL and English have also shared 150 years of cultural history in the United States and Canada. As it happens, sign sequences modeled after ASL usage may also resemble more or less a structural characteristic of English; for example, in both languages, nouns often precede verbs and prepositions generally precede their objects. Consequently, a subject's ability to recall a sequence of signs may be mediated by compatible English linguistic constructions and a subject's available English language competence.

In spite of these limitations, immediate recall of structured and resequenced statements in the present study proved to be a useful means of validating informants' judgments that random resequencing affected meaningfulness adversely. Less meaningful statements ought to be more difficult to recall, and at least for the longer six-sign sequences of the present study, this was the case. We consider our results to constitute a convincing demonstration that order constraints are present in ASL and that they contribute, along with other grammatical features, to ASL sentence structure. The relative importance of order constraints compared to other sources of structure and the exact role or roles that they play constitute appropriate problem areas for further study.
Note

This investigation was supported by National Institutes of Health Research Grant NS-09590-05 from the National Institute of Neurological Diseases and Stroke. The cooperation of Gallaudet College students and administration, especially Dr. Horace Reynolds, Chairman of the Psychology Department, is gratefully acknowledged. The assistance of Gary Heiman in gathering the data is sincerely appreciated.

References

Coleman, E. B.

1965 Responses to a Scale of Grammaticalness, Journal of Verbal Learning and Verbal Behavior 4, 521-527.

Danks, J. H., & S. Glucksberg

Friedman, Lynn A.

1975

Fusfeld, Irving S.


Hoemann, Harry W., & V. A. Florian


Hoemann, Harry W., & V. A. Florian

SIGN LANGUAGE AGGLUTINATION: A BRIEF LOOK AT ASL AND TURKISH

Eugene R. Dyer

0. Introduction.

Markowicz (1972) cites studies by Stokoe (1960) and McCall (1965) showing that sign
language (SL; American Sign Language, ASL) manifests a coherent linguistic structure, and that it shares general linguistic principles with spoken languages despite its grammatical uniqueness. He notes that linguistic studies showing SL not to differ fundamentally from other languages can benefit both SL and the community to which it belongs. In the same context, Markowicz states:

The claim that SL forms are "ungrammatical" refers to the fact that SL has a structure which is different from English, but then so do Chinese, Turkish, and Swahili. It would be ludicrous to call these languages ungrammatical because they are structured superficially unlike English (1972:26).

The idea for a comparison of ASL with one of the languages mentioned by Markowicz, namely Turkish, arose from the concerns stated above and from two observable features of ASL syntax: its economy of expression and its additive strategy. In popularized works on linguistics, one often finds that these two features, to be found in ASL, are associated with agglutinative languages like Turkish. Pei and Gaynor (1969:8) define an agglutinative language as "...a language which combines into a single word various linguistic elements, each of which has a distinct, fixed connotation and a separate existence. "Since ASL appears to display, at least on the surface, the terseness and the juxtaposing strategy supposedly characteristic of spoken agglutinative tongues, further investigation is in order.

In the course of investigation, however, it became clear that some of the information regarding agglutination given by the quoted authors was simply wrong. Pei (1949:390), for example, states:

Nouns in the Ural Altaic languages take on a variety of suffixes covering all possible case
endings and prepositional constructions of Indo-European; but, whereas in Indo-European the case ending has no separate existence, in Ural-Altaic the post position is an independent word.

Yusuf Mardin (1961) lists fourteen independent postpositions of the kind Pei refers to. However, contrary to Pei's statement, Mardin also presents a paradigm for declension of nouns in six cases, five of which (all except the nominative) have true case endings enjoying no existence apart from the noun. The Turkish verb, as will be noted below, is likewise richly inflected through the use of scores of affixes and personal endings having no independent existence. The distinction thus becomes blurred between "agglutinating" Turkish and "inflecting" Latin. Turkish and Latin verb forms meaning 'they will come' (gelecekler and venient, respectively) are divided identically into stem and veni-), future marker (-cek- and -e-), and third person plural ending (-ler and --). Sapir (1921) with good reason bemoaned the classification of languages into the supposedly distinct groups known as "isolating", "agglutinative", "inflective" and "polysynthetic", adding that these structural features are not mutually exclusive. The richly inflected Turkish language (it is clearly both agglutinative and inflective) thus did not seem to manifest the kind of structural kinship with ASL which was supposed at the beginning; ASL being a language which rarely "inflects" after the manner of spoken languages.

As regards the terseness supposedly common to ASL and agglutinative languages, an enormous divergence was found instead between ASL and Turkish, and for a reason touching on perhaps the greatest single difference between any SL and any spoken tongue: their distinct relationships to what Chafe (1970) calls the process of linearization. According to Chafe, language begins with semantic structures, i.e. meanings to be expressed. Before these can be symbolized in the phonetic structures of a spoken language, they must undergo at least one "postsemantic process", that of linearization, the process by which "...semantic structures are reshuffled so that they are laid out on a single dimension": the simple example given by Chafe shows the semantic structure cat and plural converted into the phonetic
While meanings are not bound to temporal linearity or sequence, phonetic output is so bound. It is not surprising, therefore, that Turkish turns out to manifest precisely the opposite of terseness: not only must its production of segmental phonemes be sequential in time, as is the case with all spoken tongues, but by its agglutinative and inflective strategies it elects to linearize its morphemic output in time, to build long concatenations of morphemes (phonetic symbols of semantic units) extending through the temporal dimension. Thus, in Turkish, the semantic structure including give, negation, first-Person, singular, time-present, however assorted semantically, eventually emerges linearized and symbolized phonetically as vermiyorum, with one element following another in time, each embodied in its own phonetic symbol: ver- (give), -m- (negation), -iYor- (time present), -u- (first person), -m (singular). The phonetically spelled Turkish verb, four syllables and ten phonemes in length, is no terser than the English equivalent, which by coincidence is exactly four syllables and ten phonemes in length: I do not give /you do give).

The picture is considerably different with ASL. Its eventual symbolic output is not phonetic but cheremic, and is therefore not bound nearly so strictly by the requirement of temporal linearity as is the phonetic output of spoken language. The multi-aspectual sign is produced in such a way that the aspects appear simultaneously rather than sequentially. Hence the sign morphemes can convey a multiplicity of meanings with virtual simultaneity in appearance of their components. The notation system devised by Stokoe (1960) illustrates this fact, but Stokoe (1960:61-66; 1972:108-17) identifies facial, equally with manual, display as part of ASL; Woodward (1972) observes that in any complete presentation of a signed utterance, "...the face must be shown because it, as well as the hands, is part of the cheremic system of ASL. " E'ant (1972), for example, notes that the shaking of the head 'no' while producing a
given sign is the most common way of negating in ASL. With these factors operating, ASL displays the terseness conspicuous by its absence in the Turkish expression for 'I do not give', vermiyorum. ASL conveys virtually the same information via the single sign GIVE (0 0~0T~) produced while the head is shaken from side to side. The semantic content 'give' is conveyed symbolically by the double-0 dez in zero-tab ~ 0.,0~ pantomiming an act of giving, indicated in this case by a supination of the wrists in the course of the sig (~). The negation is conveyed by the head movement. The first-person-singular semantic content is symbolized by the directionality of the sig: the double dez, which was facing towards the signer (r~), is now moved away from the signer ( 1), indicating the signer as the agent. Although this sentence does not call for an indirect object or beneficiary of the act of giving, ASL could signify this semantic content as well by simply making the sig move in the direction of the beneficiary. (Turkish, incidentally, would have to add a noun or personal pronoun in the dative to convey the same information, at the cost of prolonging the utterance by at least three syllables in the case of a pronoun.) The only semantic content not specifically conveyed by the ASL utterance is the "time present" indication symbolized in the Turkish infix -iYor-. In given contexts, however, the "time present" meaning would be obvious and would not require specific symbolization. In any case, ASL appears to display what Stokoe (1972) calls "pervasive instead of verb imbedded time indication;" i.e. time in ASL is signaled not by verb affixing but by time signs whose effect, again in Stokoe's words, "remains across sentence boundaries until an overt time change is made."

The foregoing considerations removed the possibility of any neat comparisons being drawn between Turkish and ASL structure. Instead, we will cite some examples of both the apparent similarities and the enormous differences which can be noted between ASL and Turkish morphology. We will add a few remarks on ASL versus Turkish syntax, and will end with an observation regarding an ASL/Turkish lexical divergence as possibly illustrating a linguistic principle operating in both languages.
1. Morphology

1.1 Cardinal and ordinal numeration.

The Turkish cardinal numbers for one, two, and three, namely bir, iki, and üç, respectively, are converted to ordinal forms by suffixing the ordinal ending -inci, the vowels of which vary to preserve vowel harmony with the vowel or vowels of the cardinal form. The resulting ordinal numerals 'first', 'second' and 'third' are thus: birinci, ikinci and üçüncü. Obvious here is the additive strategy referred to earlier.

At first glance ASL appears to construct these ordinals by a similar process of addition: the cardinal numerals from one through three (G V 3) are converted into the corresponding ordinals by an added sig, namely a quick supinating twist (q). The resulting ordinals, especially when described in precise ASL notation, appear to have been formed by an additive process much like that found in Turkish, with the tab and dez serving as the cardinal number, and the added sig the ordinal "ending"; thus (GQ) (VQa) (3a). However, a crucial difference is present. The speaker of Turkish utters first the cardinal numeral, then the ordinal ending. Thus the two elements must be produced expressively, and be processed receptively, in temporal sequence. The user of ASL, in contrast, although "adding" the sig in this case shortly after forming the dez, retains the dez during and after the sig movement. The resulting configuration is a visual embodiment of both the cardinal numeral (dez) and evidence (supinated wrist, end-point of sig) that it has been "inflected" as an ordinal. This example illustrates in one way how misleading a superficially drawn comparison can be between analogous structures in a spoken and visual language.

One further observation on the use of cardinal numbers may illustrate the morphological (or
"cherological") richness of ASL, as it has to do with two highly nuanced uses of the numeral which are spatio-visual-kinetic in nature and hence unavailable to spoken languages. Stokoe, Casterline, and Croneberg (1965) observe:

The small circular movement that signals a numeral configuration is being used approximately seems to be in contrast with a short-sharp movement down or forward that emphasizes the configuration itself and may insist on its number's precision.

The point is not that spoken languages cannot convey these nuances but that they cannot do so with the morphological economy and virtual simultaneity of ASL.

1.2 Verb variation.

The Turkish finite verb, conjugated as to person and number as is the Latin verb, has an enormous repertoire of inflexional endings and infixes. The regular verb vermek (‘to give’), for example, has 114 positive forms in the indicative mood alone, distributed through five simple and fourteen compound tenses. Moreover, it has 59 positive forms in the subjunctive mood, embracing four simple and six compound tenses. Through insertion of a negative infix the total number of these finite verb forms is doubled. In addition the Turkish verb has: (a) four infinitives, two of which are both conjugated as verbs and declined as verbal nouns; (b) four participles, one of which is declined as a noun; (c) eleven sets of adverbial endings which can be suffixed to the verb form, and (d) four particles which can be infixed to convey reciprocal, passive, reflexive or causative meaning. A few examples of the ways in which the Turkish verb is constructed and of the meanings it can convey will appear in the remainder of this paper. For the present, an idea of the Turkish verb's possibilities for extended polysyllabic form and semantic richness can be seen from the form
vermemelivmi, ssiniz, a subjunctive, reportative, necessitative, second person plural, active, negative form of the verb 'to give', meaning approximately: 'It is said that it might not be necessary for you to give.'

Although lacking a strict analog to the additive and infixing inflexional structure of the Turkish verb, ASL has its own devices for symbolizing and modifying verbal content. Some of these are described as follows:

1.2.1 Sig variation.

Not surprisingly, the sig or movement involved in sign production is an aspect quite often associated with the encoding of variation in verbal meaning. In a few cases a special sig even distinguishes a verbal from a nominal form: Fant (1972), for example, distinguishes the verb 'to name' (0 H Hl) from the noun 'name' (0 HH) by the outward moving sig (1) in the verbal form. Within the ASL verb itself, the following kinds of variation in meaning can be conveyed via altered sig.

1.2.1.1 Verb aspects.

Woodward (1973), among others, has noted the ability of ASL to signify the progressive aspect by a particular sig variation, reduplication. Fant illustrates how distinctive sigs can convey the perfective and progressive aspects, citing the single act of thinking ('"Gr.') as contrasted with the continuous thinking process ('-G~'); in this example the perfective and progressive aspects are conveyed, respectively, by the simple "touch" sig (x) and the
1.2.1.2 Frequentative condition.

BY reduplicating the sig, a frequentative connotation can at times be added to the verb: Fant cites the GO-TO sign (0 GG ) which with reduplicated sig GG" means 'to go frequently to', 'to frequent'.

1.2.1.3 Inchoative condition.

A particular sig variation with certain verb signs can convey the notion that the action in question is just beginning or was only begun: "to begin to change", for example, can be signed by merely beginning and then interrupting the sig of the sign CHANGE,'); similarly with the sign DÉPART (BC~B<~ ).

1.2.1.4 Negative incorporation.

In certain verb signs, e.g., KNOW ) and WANT (C C ), varying the sig so as to pronate the wrist(s) produces the negations DON'T-KNOW ) and DON'T-WANT (C CO ). The fact that the resulting sign in each case can constitute a complete utterance would suggest that in ASL the very distinction between morphology and syntax is not always present in practice.
1.2.1.5 Agent-beneficiary directionality.

BY the use of sig movement away from (l) or towards (t) the signer, certain verb signs in ASL (e.g., GIVE, LEND) can connote, respectively, the signer as agent and a second person as beneficiary of the action in question, or vice-versa. As in the case of negative incorporation, a single ASL sign can thus constitute a whole utterance. Stokoe et al. (1965) note that shift of personal reference through this device is the closest ASL comes to the resultative-passive voice, which is absent from ASL but, incidentally, very much present in Turkish via the -n- infix: Yemek, 'to eat'; yenmek, 'to be eaten'. Fant cites what appears to be a phenomenon related to agent beneficiary directionality which, although also somewhat different, is mentioned here since it also involves a shift of personal reference through sig alteration: namely, the direct object shift from meeting one person' (~ G,~' G x) to 'meeting many persons' (0 G G~ x), the latter glossed by Stokoe et al. as 'mingle', 'associate'. Fant (1972) notes two components of the altered sig, the repeated twists ( ~ ) and the horizontal circular movement ( ~5 ).

1.3 Aspectual combining.

ASL appears to be able in some instances to create an analog to the Turkish causative form of the verb, formed by insertion of the causative infix -between the stem and infinitive ending: bilmek, 'to know'; bildermek, 'to cause to know', therefore 'to inform'. The ASL sign for INFORM (~0 "~0 n~ appears to combine the tab of KNOW (B ) with the dez and sig,
just slightly varied, of GIVE ( ): thus 'to give to know', 'to inform'.

1.4 Positioning of double dez.

Turkish has also a reciprocal verb form (with infix -Is- or one of its vocalic variants) which ASL in some instances is able to represent most remarkably. Take, for example, the English sentence they are looking at each other. This utterance is rendered by one verb in Turkish, bakIsIyorlar, and by one sign in ASL (L Vc ,V,c ) . The four Turkish morphemic elements are, as always, temporally linearized: (1) verb stem 'to look at' ( -); (2) reciprocal particle 'each other' (-Is-); (3) present continuous tense sign (-Iyor-); and (4) personal ending 'they' (-lar) . The five ASL morphocheric elements, on the contrary, are produced simultaneously, a remarkable further instance of ASL morphology and syntax coalescing.

1.4.1 Verbal root meaning.

The verb LOOK is signified by the V-dez with pronated wrist.

1.4.2 Agent duality.

This is signified by use of double dez; note here that the ASL utterance is clearly dual and thus more specific with regard to number than either the Turkish -labor the English they, both of which are plural but avoid specifying how many. Fant gives another example of such
specificity in number being available, and variable, in ASL.

1.4.3 Reciprocal verbal action.

This is signified by spatial opposition of double dez (<>).

1.4.4 Third Person

Is signified by the left-versus-right orientation of the two dez elements (vb>vb<); such positioning of the dez elements off the sight line denotes third person; if the utterance were "You and I looking at each other", the first-versus-second person reciprocal orientation would be along the sight line.

1.4.5 Continuous action

is signified by simply continuing production of the sign. (Present time is not expressed in the ASL sign since ASL does not imbed time into verbs.)
2. Noun variation.

As noted above, the Turkish noun is inflected in six cases, five of which (all except the nominative) have true case-endings. The noun can likewise be modified by fourteen independent postpositions governing the nominative, dative or ablative cases.

Despite its lack of a rich inflective system, ASL has its own strategies for either creating nouns or for varying noun morphology in unique ways. Some examples:

2.1 Creation of noun from verb by suffixing the "body sign"

The freely occurring sign when suffixed to a verb, denotes a person who does what the verb specifies. Turkish has such a suffix (and its variants): it can be added either to nouns (ekmek, 'bread': ekmek i, 'a baker') or to verbs (temizlemek, 'to clean'; temizleYi-ci, 'a cleaner'), but it is a true suffix with no independent existence. The ASL affix, on the contrary is an independent postposition. Moreover it can be reduplicated as an affix to signify plurality of the resulting noun; e.g., in the example cited by Stokoe (1972), "Many teach-er-er-er . . . "

2.2 Numerical incorporation via dez alteration.

By altering the dez of certain noun signs to a number-dez, the modifying number can be incorporated simultaneously into the noun instead of being prefixed or suffixed. Fant points
out, for example, how. THREE and HOUR. can. be combined into '3 hours' by substitution of the 3-dez for the G-dez (BAI 3e ).

2.3 Creation of noun from noun by aspectual variation.

One way in which ASL can expand its noun inventory is illustrated by the creation of CITY from HOUSE. The sig of HOUSE is both repeated and moved in a horizontal circle to yield CITY.

3. Other semantic modification.

One further example of a morphological peculiarity impossible in Turkish but neatly straddling the boundary between morphology and syntax in ASL is the sign written and described by Fant (1972:72) as follows: "Another very idiomatic way to convey the idea that the same old thing keeps happening is to sign same [Y-dez, pronated wrist] with one hand, and move it in a vertical circle several times. " What we have here is aspectual combining, seen above in the verb INFORM, but this time blending the tab and dez of the adjective SAME with the reduplicated sig of the adverb ALWAYS, the result being not an adjective modified by an adverb, but a complete utterance.

The few examples cited above in this section on morphology may serve to suggest that while ASL may lack the inflectional richness of a tongue such as Turkish, it has a peculiar
flexibility unknown to any spoken language and a creative genius all its own.

4. Syntax.

The preceding section included evidence that ASL morphology (or "cherology", the substructure of signs, from Stokoe 1960) and syntax (the rules for combining signs into utterances) cannot always be regarded as separable entities. Syntax, from its Greek etymology, means 'ordering together', and the evidence presented above shows ASL ordering of units of meaning together as no spoken language can, in physical space and temporal simultaneity. This unique feature, among others, tends to render useless what superficial comparisons can be found between "word order" or "concept order" in the "sentence structure" of ASL and that of Turkish or other spoken tongues, comparisons which this writer was naively seeking at the outset. Nonetheless, a few examples may be useful and are added at this point.

4.1 Mektup Ya zdlm. ('I wrote a letter.' ) The components are arranged as follows:

Object Verb Stem Past Tense Sign Personal Ending
One is tempted to order the ASL equivalent as follows:

LETTER WRITE FINISH ME

This would probably be an idiomatic ASL rendering, and comparison with the Turkish sentence structure is tempting. However, it is only superficial for two persuasive reasons: The -d- of the Turkish is a verb-imbedded past-tense marker necessary to the sentence, while the FINISH of the ASL utterance is a time-indicator of the kind described earlier, an element which could be omitted if the context so permitted, or if the past time-frame had already been set. [FINISH is also, or first, an aspect marker close semantically to English (have -e~). Ed. note] Secondly, the Turkish word is strictly fixed, while the ASL elements, particularly the verb and noun, could have occurred in a different sequence. Stokoe (1972:88) notes that "Sign users indicate and understand the semantic relations by form in verb and noun signs and leave the order virtually free."

4.2 Dun evde kaldım. ('Yesterday I stayed home .') The elements are arranged thus:
Time Past   Personal

Expression Complement Verb Stem Tense Sign   Ending

Dun evde kal- -d-   -Im

Yesterday home-at stay -ed   I'

The ASL gloss might well be:

YESTERDAY HOME STAY -- ME

Again, the gloss appears to be idiomatically correct ASL, but note two differences from the Turkish: Dun is only a temporal adverb, not a tense marker, so that the -d- past infix is still required in the Turkish verb; in ASL, "yesterday" is a time-indicator rendering any further past marker superfluous. Secondly, no locative case marker corresponding to Turkish -de of evde is required in this ASL utterance.

4.3 Bu ak,si,m sinemaya gidemiyor musunuz? ('Can't you go to the movies this evening?')
The sentence is constructed as follows:

4.3 Bu akşam sinemaya gidemiyor musunuz? (Can't you go to the movies this evening?)
The sentence is constructed as follows:

<table>
<thead>
<tr>
<th>Time Expression</th>
<th>Complement</th>
<th>Verb Stem</th>
<th>Potential Sign</th>
<th>Negation Sign</th>
<th>Tense Sign</th>
<th>Interrog. Particle</th>
<th>Personal Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bu akşam</td>
<td>sinemaya</td>
<td>gid-</td>
<td>-e-</td>
<td>-m-</td>
<td>-iyor</td>
<td>mu-</td>
<td>-sunuz</td>
</tr>
</tbody>
</table>

'This evening movies-to go can not (present) ? you-plur

In this example a likely ASL gloss is even farther removed from the Turkish, and might be written thus:

NOW-EVENING MOVIES (GO-TO)  CAN'T  --  [ ]  [ ]

One item of morphological interest is that the TO element in the GO-TO sign (GG) supplies an analog to what the dative case ending -Ya conveys. On the other hand, the whole verb sign in ASL is placed in parentheses since it probably could be omitted in idiomatic ASL without loss of the sense. Additional differences: 'this evening' in ASL is construed with a temporal, not a demonstrative, qualifier, thus NOW-EVENING; the Turkish markers for 'can' and 'not' coalesce into ASL CAN'T; the present time, as noted above, would not be expressed; both the subject pronoun and the interrogation would most likely be conveyed by eye contact and facial expression, hence the brackets under the respective sections of the
Turkish pattern.

4.4 Bayan Gul hafifce kapıyı vuruyor. ('Miss Gul is knocking lightly on the door.') The Turkish sentence pattern, English literal translation and ASL gloss are as follows, respectively:

Subject Adjective - Adverbial Verb

Noun Ending Object Stem Tense Sign

'Bayan Gul hafif

'Miss Gul light m-i-s-s q-u-l

ce kapıyı vur-uyor'

ly door-on knock-ing is'
The sign noted here is of pantomime origin and is listed in the Dictionary of American Sign Language with the gloss 'knock [on a door]'. If produced with a gently executed sig, this sign would convey all the information encoded in the last three words of the Turkish sentence (except present time, for reasons stated earlier), including continuous or progressive aspect via repetition of the sig (1). The dramatic structural difference between this ASL utterance and its Turkish counterpart is the exact opposite of what this paper was supposed to discover, and is a fitting place to end this brief section on syntax.

5. Lexicon.

The lexicon of ASL, or its inventory of signs, is an area in which misunderstandings easily arise. Poverty of lexicon has been alleged to exist in the case of ASL without regard for its peculiar spatio-visual-kinetic character and its consequent need to develop its lexical inventory within limits quite different from those affecting spoken language. Worse yet, lexical primitiveness has been alleged on the basis of mere surface dissimilarity from English.

In this connection, an interesting lexical divergence was noted while data was being gathered for this paper, namely between the Turkish and ASL symbolizations for what English symbolizes with the verb buy. The fixed Turkish phrase is saṭın almak, literally 'sale-from receive-to.' The ASL sign (BaoX1) is composed of the sign MONEY (BaoX) plus transfer of the money to another by the signer ('). Thus, at the points in history when these two surface structures became fixed in their respective languages, the creative processes operating in Turkish and in ASL had produced two quite distinct surface
representations of the identical occurrence, the act of buying. When the speaker of Turkish "buys " he "receives from a sale "; when the user of ASL "buys ", he "hands over money" Why the divergence ? Did the two groups of people creating the two languages think differently? Did the hearing Turkish peoples of central Asia and the deaf signers of North America perceive different meanings to be expressed in creating their respective symbols for buying ? Probably not.

What may be in evidence here is not so much a discrepancy between Altaic and ASL semantic or "deep" structure, as an example of the postsemantic process which Chafe calls deletion. He notes, "Not all the elements in a semantic structure are retained in its surface structure" (1970:253). The complex surface structure of 'to buy' would appear to imply a number of semantic elements: a bipolar personal situation, desire for profit on either side, available goods to transfer reciprocally, an agreement, and the reciprocal transfer itself, with an emphasis on one side of the transfer (possibly on the nature of the goods transferred as well) which distinguishes the resulting surface structure from that of 'to sell'. In the postsemantic process of linearization, whereby these semantic elements are realigned for subsequent symbolization, the process of deletion intervenes. This process selects as many elements as are needed to assure transfer of sufficient semantic material, but deletes or leaves behind the remaining elements. In the case of ASL, the deletion process in this instance would have selected the purchaser's possession of negotiable goods and his transfer of them to the second party. In the case of Turkish, the elements selected would have been the transaction itself and the purchaser's receiving of goods therefrom.

From this perspective on lexical divergence one can better appreciate the citations from Markowicz made at the beginning of this paper to the effect that SL shares general linguistic principles with spoken languages, in this case the principle of deletion. Such commonality appears to exist despite the grammatical uniqueness of SL, illustrated in the sections on morphology and syntax. And perhaps the foregoing remarks on ASL and Turkish morphology, syntax, and lexicon may have served to suggest something both of the unique
genius of ASL and the unmistakable humanity of its creators.

References

Bellugi, U.


Chafe, W. L.


Fant, L. J.

1972 Ameslan (Silver Spring, Maryland: National Association of the Deaf).
Madsen, W. J.


Mardin, Y.

1961 *Colloquial Turkish* (London: Routledge & Keqan Pau

Markowicz, H.


Pei, M.

Pei, M., and F. Gaynor


Sapir, E.

1921 *Language* (New York: Harcourt Brace & World, Inc)

Stokoe, W. C.


Stokoe, W. C., D. C. Casterline, & C. G. Croneberg

1965 *A Dictionary of American Sign Language on Linguistic*

1976 *Principles* (Washington, D.C : Gallaudet College Press); 2 ed. Stokoe (Silver Spring,
Maryland: Linstok Press).

Stokoe, W. C.


Woodward, J. C.

1972 Implications for Sociolinguistic Research Among the Deaf, Sign Language Studies 1, 1-7.


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**ON THE PROBLEM: THE ORIGIN OF LANGUAGE**

Harvey B. Sarles

**0. The occasion.**

The New York Academy of Sciences has decided to sponsor (in September of 1975) an extensive discussion on the origin of language. One wonders whether this issue, which arises seriously about once every century, will provide any news this time through. Will it be an exercise, a convention of the high priests demarcating the arena of the "problem? " Will it be a disputation; or is there a singular point of view which has been subdivided into corporate areas, all with different titles, all selling the same product, all colluding to limit competition?

This is a serious wonderment, not because the language origin problem is de facto so interesting, but because of what it seems to represent and to entail. While it appears in many senses a straightforward issue, it is, in my experience, an epigram for a view of human nature: Language is that which makes man unique. The view implied by raising the issue of language origin has increasingly been in flux on a number of grounds, for a variety of reasons. One suspects that such a conference at this time is an attempt to stave off change and to restate in a very public way that the human nature "business " is in the same location
and peddling the same wares, stylized to fit the tastes of the 1970's.

I have tried, in the following paper, to state what is wrong with the "problem" of the origin of language, to offer some alternative ways of conceptualizing the underlying issues, and to show why they might be interesting. In my view, the "origin of language" problem is a pseudo-problem. As it is conceptualized and treated, it will not, nor can it, yield any new knowledge about language or about human nature. In the history of ideas, its elaboration already presumes a particular definition of human nature.

Discussion of the "origin" of language only defends this definition--and embroiders it with a network of entailments which follow directly from its assumptions. It is virtually a system of thought about human nature, and consequently it does not leave itself open to attack, or even to discussion. It presumes that language and reason are essentially the same, a unity, in correctly describing the human condition; any attempt to re-orient the problem is considered to be against "reason" and therefore irrational.

Any set of ideas whose ultimate defense rests upon such grounds seems to me to be very suspect. Nor can I find any grounds on which such a problem is open to the possibility of proof or disproof. It is no more than a particular descriptive system; one which is probably as consistent and accurate as, say, any particular geometry. This is not to say that the prevailing view about language is uninteresting or non-useful. It is to claim that it is not necessarily an exhaustive or accurate system. There are different ways to think about language than the issue called "the origin of language" would suggest.

What does the notion of language origin presume: Why is it interesting to question the very raising of this issue, particularly at this time? Logically, the issue presumes a type of human
uniqueness which is progressive; we are similar to animals only in some respects. In the realm of "language" humans are so different and so advanced beyond other animals as to be non-comparable with them. The issue thus presumes an essential discontinuity between (other) animals and humans. In such a situation, the presumption is that there was a (historical) jump between human predecessors and human beings. The reason for the problem "the origin of language" is simply to account for the differences between humans and non-humans.

The logical problem is that there is no way within this conceptual system to find out what non-humans are like. Non-humans are conceptualized as particular forms of deficient humans; not in their "own terms." We have decided that they do not possess language; the problem is to convince ourselves how a few of these have-nots could have come upon what we consider to be language. Reading the history of this issue, it seems that different theories have appeared reasonable and convincing in different eras (Salus 1969). Since logically, on prior grounds of non-comparability, there is no possibility of a knowledge base for such theories, what appears reasonable or convincing must have to do with issues extrinsic to the so-called problem. Either there is no issue, or there is no possible solution. It thus behooves us to investigate the presumptions which lie behind this pseudo-problem, and to ask why it appears to be reasonable, even to otherwise reasonable people.

Part 1 of what follows will be devoted to unraveling the underlying presumptions. I offer an alternative view about the nature of animals and men. In light of the continuing observations that our ancestor~ were already social creatures, language did not make us social. I attempt to develop the implications of this different conceptualization of animal sociality, how it might affect our view of human nature and of language. Along the way I will also point out that some animal behaviorists have taken the prevailing (pseudo) beliefs about human language and have tried to promote their views about human nature, while appearing to derive these views solely from observations of non-humans. Overall, I will attempt to show that we principally use the form of animals and man to tell one species from another. This fact of the existence of bodies has been by-passed and neglected within the prevailing...
conceptual construction of the problem "the origin of language."

1. Individuals and minds.

The primary urge which has pushed the development of our views of human nature has been theological, metaphysical, and political. What is the nature of human life; especially of death? This construction of the problem of human life postulates that the "soul" or "mind" of man is the uniquely essential aspect of human nature. It not only differentiates us from (other) animals but endures also beyond the "life" of the body. With just one more assumptive piece, this accounting of the problem of human nature seems to have predetermined almost all of our thinking about humans, about language, about other animals, and so on. The remaining assumption is that the primary locus of being of both soul and mind is the individual human being. This is sufficient to account for the language origin problem. An alteration in any one of these pieces will change the way in which we conceptualize human or (other) animal nature.

It follows quite easily and directly from the notion that human beings are unique because of our souls and minds that we alone possess other unique facets of our being. For any number of reasons, but mostly on theological grounds, the perfectly obvious idea that our bodies are also distinctly human has been rejected as a focal area for accounting for human nature.

How are souls and minds of human beings unique? In several ways; and it is important to note that the ancient solutions to these questions still seem appealing and commonsensical. Once this question seems reasonable, its potential solutions follow. If no man has a soul which endures forever, then the conceptualization of human nature already has taken on a particular viewpoint of the nature of time "must be" made an attribute of being rather than,
say, a relationship among persons and the external world. If the soul is forever, tempting is the thought that any particular moment is a mere step on the stairway to heaven. If we view any moment from the prospect of forever-after, it is likely to appear infinitesimally small. It is one more small step to think of it as illusory, because an entire life is but a moment in the greater expanse of time. Who is to know but that all we observe is a shadow of some deeper reality? God only knows.

It also follows from this concept of soul and time that animals, not having souls, also do not have time. How else can we account for claims that (other) animals exist only in the "here and now?" The other element in this thinking is that minds are what give us the time sense; thus it must be that bodies do not possess such abilities. Bodies only exist in the "here and now;" sensation is in the body; we have bodies essentially like those of other animals. Bodies are natural, biological; the mind is what is unique to man. The mind is, in some sense, extra-natural or supernatural. If we want to find out what is really natural about human beings, we must observe other animals.

These ideas follow easily from the notion of time, which the postulation of human uniqueness and "soul" seems to force upon us. In a complicated way, most of the elaborations of human nature have also derived from this postulate. If we believe that animals live only in the moment, we believe that we do not. This then sets up a difference, an opposition, between mind and body, between "concrete" and "abstract", between "subject" and "object", and leads to a theory of knowledge in which the most important aspects of human nature are precisely those features by which we presume ourselves to differ from (other) animals. It is not at all necessary to know anything about other animals--we have been able to invent their capabilities fully without the necessity of consulting "them." Almost all our methodologies for studying other animals' "language" already presume that which they set out to discover. Later I attempt to show how our methodologies for investigating their communication systems have been set up in such a
way that our theories about them cannot possibly be refuted. (1975)

The roadway connecting language with mind is also quite direct, following from the primary locus of being in the individual and from uniqueness: What is the mind? What is in the mind? Obviously bits of being which make us unique: ideas, thought, memories, i.e. time and all it implies. Non-body. We are the only animals who have language. That seems clear enough, although I suspect it was derived from assumptions not from observation. It simply is not difficult to note that many animals make complicated noises. Why do we assume and believe they do not have language? Not from any evidence, but because we believe that we alone have language, ideas, thoughts. And this is what makes us unique. Each step of the journey appears logical, but it is nonetheless circular.

The individual contains the ideas or thought which language represents. The mind or soul is that which is the essence of men, but, especially, of each individual man. One suspects, as Nietzsche points out (1967), that Plato was attempting to make time stop, in order to ward off the fear of impending personal, bodily death, and to ensure (a theory of) immortality. Thus the notion of human nature as located in each individual was motivated not by a consideration or understanding of life as living processes but by the attempt to manage and conquer the fear of death. This view has led to a virtual impasse in the development of theories of mind, and so of human nature. (1973a).

In the history of ideas, the notion of (other) animals' understanding the world and one another seems not to have arisen seriously until relatively recently. Bestiality implied a sense of non-rationality, intemperance, and a lack of self-control, forethought, and controlled impulses. No wonder that the presumed road from non-human to human nature is strewn with so-called "primitives", who are assigned increasing doses of rationality yet
retain certain "deficits."

In "origin of language" theory it is simply not possible for animals to communicate deeply; the theory implies a notion of the (other) animal world which makes only human beings capable of understanding the universe and one another. Language and the "gaining" of language enabled us to understand the objective or external world and one another. The ontogeny of the individual recapitulates the development of the human species. From non-language to language, understanding, rationality, communication. Language enables communication, society, culture. Human beings develop consciousness through understanding others and how others understand them; consciousness of the "I" enables the "thou."

In broad outline, this is how the origin of language problem has been and continues to be conceptualized. Its "solution" should show how non-thinking beasts could have begun to be rational, logical, and conscious of self.

It seems that certain stories which gradually extend what we believe to be "animal" or bodily abilities have been and continue to be the most plausible. Physical or emotional gestures seem like reasonably intermediary steps from animal to human nature. Before we engage in offering such "solutions" however, we must require that we know, in some deep sense accurately, about the behavior of other animals. We do not possess such knowledge. I do not believe that we can obtain this knowledge, because this conceptualization of the language origin problem strongly suggests a particular view of other animals which is based on their not being human—which has meant their not having language.

It remains unclear what goes on in (other) animals' "minds. " What is clear is that our
conceptualization of human nature and language forces us to believe a particular story about animals which is derived not from animals themselves but from our own uniqueness theories about human beings.

2. Objections to the "problem."

My objections to the problem are of several sorts: a. Our predecessors were already social. What we call language is a (possibly) new form of communication, but it is not necessarily that which makes us unique. (1969, 1974a, 1974b) b. Current formulation of the problem blocks the possibility of learning much new about human beingness. It presents a view of language which focuses on "differences" and obscures possibly valid comparisons. It is my experience that comparative work must proceed from similarities, not from differences or it will tend only to confirm, describe, and account for the observed or presumed differences. (It can only confirm, or enlarge, human/non-human differences; it cannot possibly cast new light on the human condition.) One wonders why people engage in this supposedly comparative problem, when they already presume strong human uniqueness. (1972, 1975) c. The problem calls attention away from a series of potentially interesting ways of thinking about human nature; e. g. the notion that human beings instantiate others as faces. (1972, 1973, 1974a)

d. It makes Man appear to have stopped evolving when he "got" language and urges a static view of the human experience. e. It enables the ideas of the view of mankind which seem plausible at any historical moment to appear as exhaustively true. (1975) f. By setting Man up as unique because of his mind, this view of the problem idealizes the normal use of language and sets up a group of defective (or animal-like) human beings; e.g. retarded persons, deaf persons, persons who speak differently from the majority. The problem is implicitly, perhaps necessarily, racist. (1972, 1974d) g. By setting up human creatures as more complex than animals, it has oversimplified most animals. It has also tended to permit
us to oversimplify our species, since we were by it unique only because we had language. It has been tempting to seek simple and static solutions, or schemata, to account for what, in my life at least, is a very complicated and ever changing being-and-experiencing. h. The mere announcement of the problem suggests that we already know, in some deep sense, what language is. Thus it obfuscates the fact that our theories about human language remain relatively simple and minimal. Language, the "target" of the process by which animal becomes man, tends also to be static, an entity rather than the behavioral, muscular processes which language undoubtedly includes. (1974e) The exciting thing about comparing animals and man is that we may gain new ways of thinking about man, rather than being forever locked into our ancient humanly derived ideas about ourselves. (1972) i. It blames "the victims"--animals are made not merely different but also "defective" human beings. (1971) j. By making human beings appear to be especially unique, it forces us to lump all (other) species into a single, non-language-possessing universe. It is more likely that there are greater differences in the animal universe than the speaking propensities of human animals would suggest. k. It implies or includes a theological and political view of man which is claimed to be wholly intellectual. Particular theologies and particular politics are borne on the wings of its proclaimed scientism. (Any position about human nature which claims a purely scientific base is either very naive or its proponents are attempting to wrap their prior views in new cloth--perhaps both.) (1975a)

1. It calls attention to the individual in ways which obscure the social aspects of human existence or make them seem to detract from the possibilities of individual freedom. (1973)

On the contrary, Language is a social process. The major notion derived from ethology which has impressed me (with respect to the language issue and its emergence at this time) is that it now appears clear that pre-humans were already social creatures. We did not become social on becoming human and through the use of language--human beings were always social, are always social,... What this implies for language origin is very deep and far-reaching, because our origin theories rest in large measure on a story which makes language the primary function or enabler in human society and culture (Cassirer 1955).
Many ethnologists still entertain this vision: In the view of Lorenz, language is a quality which virtually removes man from nature—"The greatest gifts of man, the unique faculties of conceptual thought and verbal speech which have raised him to a level high above all other creatures" (On Aggression, p. 230). Lorenz sees the unique features of man as so great that man is not directly comparable to other creatures. To even find out about man's "natural, biological, instinctual" state one must and can only infer from other creatures to man, because language obfuscates man's inner, deep, true nature. Those particular features of man (e.g. aggression, morality, territoriality) for which Lorenz and other scholars claim primacy guide the research and interpretation of their work and their scholarly traditions. One must be wary of the so-called biologist who has man as more unique than other species because of a certain attribute such as language, because he can use this story to characterize human nature pretty much as he wants to--yet it remains inobvious that many aspects of man's animal nature remain unnoticed, unnoted. We must be wary, because the nonobservers among us tend to trust the observations of a brilliant biologist like Lorenz. We are less aware that his story which claims to be biological is so similar to the theo-political metaphors which have guided traditional thought that his behavioral biology may simply be a new form of the same old story (cf Waddington 1975).

Thus many ethnologists-behavioral biologists continue to believe man to be an especially peculiar form of demi-animal, because of his "possession" of language and all that language has entailed in the history of Western thought about language. But it seems clear to me that man—as are all species by definition if the biology of "species" has any real meaning—is unique. In attempting to understand the problem of the origin of our species we must wonder what it might mean to be already social and to have evolved as social creatures. The question of language origin assumes that language came first, then enabled communication, understanding,... then society.

Being social seems to imply that creatures engaging in social processes already possess some sense of knowledge of one another, of who is and who is not a "member", or of who can be or might be a member, etc. Sociality involves communication, understanding,
politics, law, morality. It implies a sense of being, a way of being, with respect to others, a member of one's significant grouping.

As one begins to think through some of the implications of sociality, a number of questions arise about what human language might "mean". If all social creatures have some sort of knowing (an "epistemology"), then human language may simply represent another form of knowing--one among many. All species "know" their universe; survival means, to me, senses of knowing.

How can non-languaging creatures communicate? What might they communicate about? What does the notion of communication ultimately mean? Is language used to communicate? If we are (also) social creatures, then could we have communicated before we had/could language? What is language anyway? Expressing the problem this way might lead one in a number of different directions:

a. If communication in human beings exists "pre-language" (e.g. between mothers and infants), what are the forms and nature of such communication?

b. How does language develop and change and/or enrich the nature of communication?

c. How do deaf people understand one another (and the world) ?

d. What is animal "noise" about? Is it speech as opposed to human language (in a
sign/symbol dialectic sense)? Are its form and nature that different from language; or have our ideas about animal noise ("calls") been guided by our assumptions about human uniqueness, leading us to believe that (other) animals are so un-rich, stupid, non-abstract, un-thinking creatures? (If the latter, then most of the current work in animal communication "calls" must be anthropomorphic.)

e. What do other animals hear and "think"? Does this have anything to do with their "limited" mental capacities? Is it any less anthropomorphic to say that other animals "think" than to say that they don't "think"?

f. If animal being and animal communication have something to do with animal form, do human being and communication have much to do with human bodily form?

g. What is the human body as a communicative instrument; e.g. how do infants "understand" their mothers'(bodies)?

h. How do adult bodies influence their communication, being, understanding?

i. How do people get to look like they do?
j. What is the nature of "gesture"?

k. And what the "innateness" of communication?..

In thinking about the nature of sociality with reference to human and other animals, several features become apparent. (1972, 1973a, 1974a) We are not merely "minds and bodies" in an individual sense; we are "socially expressive" creatures whose presence and movements are available to, and actually noted and monitored by, others. "Even" in the human condition, most of our behavior is nonverbal and is constantly "read" by other people. Social adults have in mind the product they desire in their children, a model of future being delimited by the way they see their young. If the concept of misbehaving is available to social animals (and sociality implies such behavioral limits), then each animal who punishes must enjoy a sense of being which is well defined. Social adults do not merely see and interact with larger or smaller bodies; they have some notion of other beings as proper or improper.

This notion of human beings as already social and communicating beings points toward redefinitions and reconceptualizations of language. Our ancient, yet current, ideas about language and linguistics are clearly asocial, probably antisocial, in their entailments. Definitions of language (all of which must be reconsidered in light of human-as-social-creatures) include the very idea of grammar as the set of all(possible) sentences and of the words which compose them. But grammar has never led to the study of the body or of communication.

In the real-social world, the sounds which emerge from our mouths and faces are merely a form of communication; they do not enable it to occur. Language (now emphasized because
its very existence is open to question) enables the forms of communication to expand and change. It helps us to manipulate space and time, gives a sense of permanence to one's being and to the world of others and of objects, and makes sensible one's existence in others' terms. I question, however, whether language enables us to be conscious, human, rational, intentional, logical, creative, or any of the other mind-related terms which the exclusive definitions of language as distinctly human have forced us to believe. In Western thought, language and reason are coterminous and tautological. They can tell us nothing new about human beingness.

In the real-social world, individuals emerge; they do not pre-exist, bounded by their souls or by their skins. Current grammars imply that each individual is the (sole) repository of the rules for generating all possible sentences. Though in many senses a truth, this implication is a limited and misleading one. It makes, for example, the existence of human bodies become essentially inconsequential to human being. Current language theories are conductive. By making human uniqueness appear to be most clearly due to the uniqueness of the human mind, they lead us away from the fact that the human form is quite special. Consequently we have been led to study facial expression as if it represents merely the external workings-out of one's inner being, rather than having a complex nature which may in some senses be causal and not caused. (1972, 1973a)

Perhaps the first move in understanding the nature of language as part(s) of a social interactional process is to postulate a different form of grammar, a grammar not of sentences merely but of questions and responses. (1970) In sentence grammar (i.e. "mind grammar") questions are only another form of sentence. In the real-social world of interaction, questions get answered!

I suggest that the Human Grammar, at least of early child development, is composed of parents playing a game of question and response with children about their relationships and
the external world. They use the existing communicative body relationship and extend it to the external universe (Wittgenstein 1958).

It is interesting to notice that certain aspects of the languaging process have been almost totally overlooked—just simply missed or dismissed—because of our preconceptions about language as words and sentences, surface representations of a deeper mind. These "surface" representations have a lot to do with what an infant is about. Consider: The infant watches very carefully the mouth and other facial movements of its parents. We have missed the fact that languaging is itself a set of facial expressions. "Baa, baa, black sheep" is explosively, contrastively facial, especially as we say it to an infant. It is engagement (practice in moving and shaping) not merely words. How has it been missed in our descriptions of language?

In the quest for the origin of human language it may well be that what is most important is not the mere size or complexity of the brain or the presence of suitable types of vocal cords, but the fact of having human faces with facial muscles. Why has this obvious fact of human existence been omitted from our theories about being? Consider the human propensity to personalize, e.g. to remember, people essentially as their faces. (One can only speculate about which bodily aspect dogs would choose to preserve in a "Doggie Hall of Fame! ")

As in any enterprise, one must be clear about what he thinks is important or primary about the nature of his subject matter. I am confident that the Origin of Language problem would look quite different than it seems today if the (apparent) fact that human beings do most of their thinking about other human beings in very complicated, dynamic terms of their facial expression were to be elevated to a central notion of human behavioral theories (and why
Linguistic descriptions of phonetic articulations discuss the how and where of sound formation but neglect to point out clearly that languaging is like other muscular movements. Talk is a muscular process, not to be relegated to "pre-linguistics" but to be seen as how human beings are. The body "feels good" to move and exercise, and talk is a form of exercise (particularly satisfying to the lecturer one would guess, the lecturer as marathon runner. (1974a)

Our mind-theories of language have been so attractive that the fact that human bodies like their speech "straight-on", full face, has never entered into acoustical theory. Somehow we have been deceived into believing that sound strikes only ears and so auditory nerves, and that the shape of the human face is inconsequential to the shape of the message it hears, and feels.

Human beings also tend to get their speech "full body front"; many other animals' hearing apparatus are located essentially "in front of their bodies. The very form of our faces, as we come to 'look like' we do, may have a lot to do with the sound we hear or like to hear. Bodies are absorptive and reflective and shaping surfaces, as well as male or pretty or non-animaloid.

The single largest tissue change in the human body in the first few days after birth takes place in the saliva glands. How is it that our descriptions of human language seem to overlook this fact, that muscular control of saliva is crucial, if not defining, of human talking and possibly human mention? Both our talk and our listening occur only via a layer of
saliva. Dryness and languaging are not compatible.

The (mere) fact that these processes work so well for most of us, that they go unnoticed, unresearched, and un-thought about, does not mean that they are unimportant. The muscular device called the human tongue is quite meticulous in touching to talk, and also in spreading saliva. (Language as a sub-topic in the study of saliva? Better that the origin of language problem focused here!) The tongue "knows" its domain so well that only changes in the domain will remind us that the tongue is the major shaper of the mouth and face; the tongue is constantly tensioned. It is visually available to infants to see to feel and to explore their own tongue. The "oral" stage of development may not only be "mental" as well but also the major mode of exploration of the world for the first years of life; i.e. most of one's external contacts take place through the mouth.

What are other animals' tongues doing while they wander in the forest primeval? What about their saliva? No one seems to know much about tongues or saliva, beyond a first, superficial attempt to characterize the proteins which may be found in the average bit of spit. The "origin" of language may have principally to do with human tongues, and saliva.

The major point of this section is that all of this occurs not merely in one's mouth or mind or body, but also in the presence of other creatures in whom we show interest. Human babies spend a great deal of time and energy watching others' faces--not simply in "psyching" others' minds but in studying others' faces. How is it that they sense that their "face" is "like" their mother's? If we want to understand the origin and development of language, is it not sensible to study its original students, our infants?

4. Knowing as a social process. Granted, that children are involved with others' faces and
bodies; how is it that they get to know about "the external world"? How do they come to know objects, to name concepts, to become the sorts of conscious, abstracting, creative, reasoning creatures that we like to think of as uniquely humanoid? Are they?

In order to probe this issue more deeply, we have to consider what we imagine language to be and again to point out that heretofore its characterizations have been partial and particular. They follow from and justify the beliefs about human uniqueness for which they were constructed. Language, for example, appears to be infinite in sentence grammar, "because" we are creative and can expand our ideas way beyond our experience. For Thomas Aquinas, we are creative because God is infinite (Pegis 1948), and other animals without souls cannot be creative. It seems to me that this one aspect of language has been raised to primacy because it assisted in the human uniqueness, the having-a-soul, argument and not because it was clearly correct. How can we possibly know whether other animals are creative, abstract whatever? Almost all of our methods for studying them have precluded this very possibility--with the exception of the Gardners' and some other current work with chimpanzees (Gardner 1971).

The arguments about human language have implicitly (occasionally explicitly) carried with them a description of how animals think--rather do not think. I suggest that such arguments derive not from animals but directly from human characterizations of animals as sub-human. The idea that animals have "calls" which are more or less instinctual is not necessarily to characterize animals in their own terms but to set off human animals as especially special. "Callists" are guilty of this sort of anthropomorphic reasoning, which they often accuse others of employing. That they can turn around and use descriptions based on a view of animals as defective human beings to characterize human beings is understandable only if we believe that they came to the study of animals already having axes to grind about human behavior.
About the appearance of language as infinite, I suggest that infants already relating and communicating with parents begin somehow to be in a question-response relation with them. (1970) Given several dozen "question words", each yielding a distinct "response set", language would indeed appear to be infinite. The set of all answers to the single question "Where? " is itself infinite. It generates as many answers (sentences) as there are "places" in the imaginable universe. If anything, there are quite a few infinities in language, but that fact does not make language any more mysterious or mystical or special than the facts of the existence of anything else (nor any less).

The primacy of the assumption of language-as-infinite has given a particular twist to the "great" problems in Western thought. However, it has not yielded, and cannot possibly yield, any solutions. It has provided very little if any insight into the human condition beyond what it already presumes. In this sense language is merely a powerful metaphor which encapsulates a particular view of human nature. Its "analysis" will not tell us more than the metaphor already contains.

Why is anything sensible? This problem sentence grammar (S-grammar) cannot handle; it can only impute making sense to each (normal) human individual as innate or its propensity innate. In a social-interactional view, sensibility is a statement about what society (e.g. a mother treating her infant as a representative of how a "normal" human person constructs the universe) means sensibility to be. Sensibility subsumes "logic" or "rationality," because it shifts these notions to the way in which one's society thinks, and because it is a notion which permits change. Rationality is not then uniquely human, but it is a statement about how one's significant others think about the world.

The adult members of each community tend (within some limits) literally to see the world in approximately the same ways. The idea of a language as a set of words referring to objects already extant implies that speakers of any language see objects in essentially the same way.
Their minds might in some senses be very different, but the ability to call a "table" consistently by that term implies sameness of its properties and agreement on what it looks like. In this sense of language there is essentially no arbitrariness or disagreement about what is seen in a visually "busy" universe. In effect, each infant who will come to be called "normal" must come to see and to say in the same way as do the adults whom he will join. Sensibility is not some organismic propensity but a statement about sociality: Each child will come to see the world and understand it in about the same way as others; any failure to do so will result in exclusion from society, or the label defective, retarded, autistic, etc.

Whether any non-normal person is not willing to become sensible or is not able to become sensible is one of the points on which S-grammar and an interactional, question-response (Q-R) grammar will disagree. If one's view of language imputes sensibility and knowing to the individual, then becoming sensible is strictly the problem of the abnormal person. He was "born defective", with poor genes, "tired eggs", his mother got frightened by a goblin--the victim is blamed for his incapacity. On the other hand, even a physically unusual individual (and each of is anomalous in some sense or other as I learned in anatomy) can become a pretty normal sort of person.

It has seemed to me that becoming and staying normal is a process which is part of the social scene. It would be difficult to know in a definite way whether abortion, autism, retardation, .. are organismic or interactional, and whether their therapies ought to be directed to the individual qua-individual or to the individual in terms of some social reality (or to both). But our theories direct us to one or the other direction almost exclusively.

If sensibility, rationality, and normality are essential properties of the individual, then a lack of them or peculiar sorts of them are the "fault" of the individual. In this view, it becomes clear that the outside world and other persons in one's world are nothing more than stimuli which nurture one's being. But there are no other "minds". Time tends to be fixed; once is
forever. An abnormal life is the payoff for a "genetic accident."

Instead, I propose that life-as-interaction is a very fragile, processual mode of being. We ought to be "surprised" at how well it usually works. If an infant "looks funny" (as say in Down's Syndrome), parents are highly likely, in my observation, to spend less time and energy interacting with that child. As I have suggested elsewhere (1972), it is impossible to know whether a child has a defective or retarded mind, or whether his treatment and subsequent "internal" view are very different from what most of us call normal. (As someone who grew up as a partially handicapped person, I can give ample testimony that being physically "unusual" is a small feature of being, which tends at all moments to grow and pervade one's total existence.)

S-grammar (or mind-grammar) leads us to postulate normality as an inherent/innate attribute of individuals; Q-R grammar suggests that so-called normality (including intelligence, rationality and other traits we have believed to be uniquely human) is a statement about a very complicated and fragile interactional process. Which theory is chosen makes a great deal of difference in how the behavioral scientist will regard the world to be observed. The same choice in ways of thinking about language has very clear and definite implications for how all of us regard all people who "look different" or think differently from the majority. S-grammar, in my view, inevitably lends itself to a form of racism, because it imputes those distinctly humanoid qualities of intelligence and reason to each (perfect) organism rather than to the form and quality of social processes. In my view, S-grammar is a theological notion, which may now be retired in the context of human beings as intrinsically social, evolving, as we have, from other social beings. So also in my view, are individuality, self, personhood emergent processes, growing over time.
5. Toward an existential biology.

Where, then, are we in considering the "origin of language"?

The issue of the "origin" of a putative entity called "language" seems to have two senses: (1) a temporal, simple, causal sense; and

(2) a much broader, conceptual sense. Was there a singular event, such as the enlargement of the human brain, which enabled us to have language? Or was there a complicated nexus of processes, which gradually changed the nature of human nature--language being but one of the resultant features of being? The "origin" problem tend to suggest the former, a singular clear course, akin, say, to the origin of a glacier. Attention to the dynamic of languaging, however, to its development and the dimensions of the interacting bodies, suggests that language is one small part of a set of gradually accrete processes toward being human. There may have been many points of "origin". It is in this latter sense that the isolation of some entity that we call language is misleading. Our zeal to "account" for human nature has tempted us to capture an essence and believe that it is exhaustively the essence of man. On the contrary, the view of man as unique because of language seems to have exhausted its power of accounting and explaining. These theories of language have no place to go that they have not already been.

The dilemmas of life, in terms of our social being, have to do with the nature of our sociality. If we are always and already communicating creatures, the development of body, languaging, thought, and self are variations on the nature of such processes. It is not that our minds "take over" from our bodies; it is that we grow and develop as unitary sorts of beings. There is no question that the processes of communication change and develop through life.
It is the nature of these processes, the form and changes in them, which ought to be the subject matter worth probing—not a limited aspect of our development called "language".

The dilemma of life, as encapsulated by the "origin" problem, is that it seems to tell us that only the "mind" parts of our being represent the true person. Our bodies are either inconsequential to our being or less important in our lives. The problem, as I see it, is how to reconcile a theory of being human with our life experience. In effect, what we need to do is to admit our conceptual beings "back into our bodies." We exist as biological beings and will continue to. But our mind theories of being seem to have denied this. The antidote has been to deny the "mind" and talk only about "behavior", but this has not jibed with our existence either. We are not one or another, mind or body, but "all of these". We are, in my view, much more complicated creatures than our theories have been leading us to admit, or to realize.

In order to gain the sorts of insights and knowledge about being human which the "origin of language" problem has not permitted, observations about us and (other) animals must remain "open". It is not possible to compare with ourselves creatures whom we have already decided are different in essential features of their being. Yet, to further our own objectivity about ourselves, it is necessary to observe other species and attempt to understand their "terms", their space, their bodies. If the "sound" one hears differs according to one's sort of body, then an instrumental comparison of sound is pseudo-comparison. We need first to understand the relation of sound and body form. Current ideas seem to presume that a particular analysis of human sounds grants insight into other species' significant sounds. This sort of thinking is not true comparison but points to and highlights differences instead of similarities. All of us believe that we are different from (other animals; the question that remains is: How are we different?

As Allen Gardner and I concluded together in a debate on this issue a few years ago with
Peter Marler and Norman Geschwind, the discontinuity between (other) animals and human beings has not been in language or thought but in the conceptualizations we have brought to the problem.

The origin of language problem remains a pseudo problem. I have tried to clarify why this is so, and to suggest other ways of considering the issues involved. In my view, we are on the threshold of a fascinating era of discoveries about the nature of human nature, which an open comparative science may yield. What has, in effect, stopped us has been a firm belief in the uniqueness of man as the only creature with language.

How could we know that?

Notes

1. This statement is taken from several years of personal experience in defending my position concerning the possible comparison between human and non-human verbal utterances. The response, particularly from academic philosophers and linguists, is that they are a priori non-comparable, as different as one can imagine. I merely ask, perhaps too insistently, how they knew that, how could they possibly know that? Having been a field linguist, having done a fair amount of homework, having listened to animal behaviorists discussing their work on animals, I have been suspicious that the certitude about human languages' uniqueness rests on grounds not intellectual but part of popular views about the human condition. Who is so uncertain about human uniqueness that he must rule out such comparative efforts as doomed to failure? (1969) Who must defend the sanctity of human
language by accusing its questioners of being non-serious or simply irrational?

2. The use of parentheses surrounding other before animals is to remind us, throughout the paper, that the status of man-as-animal is what must remain open to question and debate. From a modern biologist's viewpoint all species are unique, by definition, But who can say that man is more unique or extra-natural than any other species? Why, by "language"? (Simpson 1970). Attempts to specify degrees of uniqueness are beset with definitional and perspectival arguments. What I am attempting to do is to remind us that human beings are unique but that we cannot discover the areas of uniqueness by defending a particular historical view about the species. The methods for becoming more objective about our behavior must remain broadly comparative and open. The "origin of language" problem is neither open nor comparative, as will be shown in the rest of this paper.

3. Ernst Cassirer spells out the history of this issue with great care, pointing out that a great number of issues reflect themselves in the context of being human and having language (1955). In general, it has been assumed that man was both non-languaging and non-social prior to has "possessing" language. It was language which he obtained first: This in turn enabled man to communicate with and to understand others of his own kind. In this sense, the history of the "origin of language" problem is the attempt to account for how non-languaging, non-social creatures might have "discovered" language. The view that human creatures were likely to have evolved as already social creatures suggests that "language" is quite possibly a very different thing than what we have believed it to be. Much of my own work has been an attempt to point out some of the aspects of human languaging which have been overlooked within the current construction of the nature of language.

4. Beginning most clearly with Spinoza, in the gradual development of existential, as opposed to essentialist, thought, the human body has indeed "reappeared" as an aspect of human nature, despite Plato's once successful attempts to suppress or "hide" it. My position
is that social beings are in constant contact with the forms, particularly the faces, of others. The very formulation of one's being (how one "looks") depends on how significant others imagine one looks and treat one within that particular dynamic vision. I have attempted to extend G. H. Mead's (1934) ideas to include the presence of what Mead took to be an arena of symbolic interaction. (1972, 1973a, 1974a)

Dates in parentheses and separated from the sentences, here in the notes and in the text, refer to papers by the author listed in the References which follow the notes.

5. Again it was Plato who set the issues in the form in which they presently appear common-sensically to us. The mental uniqueness of man is constructed in the Phaedo: "In this present life, I reckon that we make the nearest approach to knowledge when we have the least possible intercourse or communion with the body, and are not surfeited with the bodily nature, but keep ourselves pure until the hour when God himself is pleased to release us" (112). The underlying politics are portrayed in the Republic, where the famous philosopher-kings idea is drawn out (431). The argument is developed by an extensive definition of what ought to be: "Until philosophers are kings, or the kings and princes of this world have the spirit and power of philosophy, and political greatness and wisdom meet in one, and those commoner natives who pursue either to the exclusion of the other are compelled to stand aside, cities will never have rest from their evils, --no, nor the human race as I believe,--and then only will this our State have a possibility of life and behold the light of day" (431). The reason "language" plays a prominent part in politics is that language is what has been assumed to make man "rational.' In Plato's view, the philosopher is man at his most rational. And man must be rational to know, understand, and follow rules, a sine quâ non for the governance of a proper Republic. One's body and feelings can only muck up a clear, cool mind. Perhaps what we are really discussing is: Whose views of human nature should we believe? on what grounds?
6. The history of ideas, given these assumptions, is a development of what happened. As particular problems arose, certain solutions were considered to be inadequate, others were proposed, became common-sensical, and so on. The sociology of knowledge in this arena has to do with the tension and dialectic between prevailing opinion, new solutions to old problems, who agreed or disagreed with whom, and why particular solutions no longer (in any era) "sold" in the intellectual or public opinion marketplace. In fact, this polemic arises presently because there is now a great deal of flux in the ideas of those (all of us) concerned with human nature; quite possibly there is more uneasiness at present about the human condition than in any other period.

7. "And when real philosophers consider all these things, will they not be led to make a reflection which they will express in words something like the following? 'Have we not found,' they will say, 'a path of thought which seems to bring us and our argument to the conclusion, that which we are in the body, and while the soul is infected with the evils of the body, our desire will not be satisfied, and our desire is of the truth? For the body is a source of endless trouble to us by reason of the mere requirement of food; and is liable also to diseases which overlook and impede us in the search after true being: it fills us full of loves, and lusts, and fears, and fancies of all kinds, and endless foolery, and, in fact, as men say, takes away from us the power of thinking at all. Whence come wars, and fightings, and factions: Whence but from the body and the lusts of the body?... The body is always breaking in upon us, causing turmoil and confusion in our inquiries, and so amazing us that we are prevented from seeing the truth" (Phaedo 120f). In the Cartesian form of this argument: "Thought is an attribute that belongs to me, it alone is inseparable from my nature" (Meditations 26). Descartes claimed that our bodies are like the bodies of (other) animals; he set up the possibility, reified currently by Chomsky (1966) of "language" as the locus or entry into the essential, unique aspect of human nature, the human mind.

8. Whitehead (1929) has attempted to make time an ongoing process rather than a mere attribute of being. I agree with his position on the nature of being-as-process. However, he does not deal with the sociality of man and its implications, as his is "A Philosophy of the
9. "Phonetic animal expressions convey, almost without exception, subjective situations and aspirations. They are affective sounds which seldom tend to become objective designations or denominations. They express the idea of immediate time only, of a present situation or one which will occur in the immediate future. They cannot express abstract ideas which are unconnected with organic behavior" (Busnel 1963: 69). These statements do not necessarily have anything to do with (other) animals. They merely follow from the uniqueness assumptions about human nature. The (other) animals and (human) bodies are assigned the "leftovers" in a mere embellishment of Aristotle: "The animals other than man live by appearances and memories, and have but little of connected experience; but the human race lives also by art and reasonings" (Metaphysics 980b, 25).

10. If human reason-language raises us to a point where we are extra-natural in some sense, then an area of inquiry appears in which the fundamental or real nature of man seems open to dispute

11. "For the body which is moved from without is soulless; but that which is moved from within has a soul, for such is the nature of the soul. But if this be true, must not the soul be
self-moving, and therefore of necessity unbegotten and immortal? (Phaedrus 286; see also Phaedo, especially the introductory comments on the philosopher's proper concerns with death). Is the "origin of language" problem a theory of life?

12. If Descartes cogito ergo sum is considered carefully, it claims that each individual exists via thinking and language. But the problem of possibly understanding others remains a dilemma in this construction of the "problem." In the tradition of Plato-Descartes, the "problem of communication" does not even arise, and language has a purely autonomous existence (Chomsky 1968). For others (e.g. Cassirer), language enables communication, but how it does so remains unclear and will continue unclear, in my view. Scholars engaged in the "origin of language" problem represent both of these views, and they talk "past" one another, because their underlying assumptions about the nature of language and consequently of man are different with respect to the nature and the locus of "mind".

13. While the notion of (human) consciousness seems intuitively correct, and self-evident, claims that (other) animals do not possess it, or are not conscious or self-conscious, might direct one to rethink its sources. Just as language as the nature of consciousness is arguable, even though psychology claims to be studying IT (Miller 1962), so it may be a useful exercise to consider consciousness as: "The ability and willingness of an individual to cue-in on a shared, multi-person picture of the world when it is situationally appropriate" Sarles 1973: 37).

14. My objections include a number of ideas which are developed in this paper; however, some of them have been argued only in other papers and will be left as simple statements here. Reference is made to other papers where each issue has been considered.

16. There will always remain, I suppose, a question of whether non-human animals have any socially meaningful idea of what "significant" might mean; but, as we will see, most people who engage in the boundary disputes about human nature constantly are working for ways to preserve human uniqueness and will use any available method. Anyone who is so confused about human uniqueness as to have to defend its boundaries is hardly in a position to be objective about the language origin problem--for this is often merely a metaphor about exactly the human-animal boundaries. Most of those who wish to protect the uniqueness of man with the concept of language are responding to an inner urge which has to do with politics, theology, or both (cf Adler 1967; Bronowski 1965).

17. The Psychology of Development continues to be concerned with mind/body dualism in a way which parallels and virtually caricatures the "origin of language" issue. The question which is generated by Piaget is how a "biological-reflex" creature comes to be rational. I suggest that there is a potential Anthropology of Development, in which it is obvious that children turn out to be mostly like their parents and families and communities. (1970, 1970) "Rationality" is, in my view, some sort of statement about adultocentric views of themselves and the world. It is what the "normal" community agrees is rational. The confusion is between the nature of growing up to be "rational" vs. becoming "adult". Since "rationality" as a social process is not a priori delimited, the proposed Anthropology of Development is potentially a comparative discipline; while the Psychology of Development is not and cannot be comparative, except within the confines of a particular definition of rationality. In a deep sense, the "problem" is exactly about such a definition, and "language" is merely a cover term for it.

18. The use of that term "speech" to designate what (other) animals utter verbally is opposed
to "language", i.e. what human beings supposedly do. The term "speech", used in this way, is merely an icon for the "origin of language" problem. It has no basis in fact, and is used, in my experience, to stifle discussion.

19. Those who claim to study animal "calls" have fallen into the thinking mode that makes animals deficient human beings, without any clear acknowledgment of it. Marler's elegant exposition of the nature of (other) animals' "calls" is a human thought constructed about other animals and so irrefutable in its own terms: "In animals the tendency is ... to pack as much information as possible into single, indivisible signals. Thus a bird alarm call is at once a symbol for a predator and a directive to escape. The "roughgrunting" of chimpanzees announces the discovery of food and also invites others to come and share. This incorporation of noun and verb function in the same indivisible signal greatly limits the possibilities of syntactical rearrangement of signals to create new messages" (Marler, quoted in Stokoe 1975). The "callists" seem already to have decided that (other) animals do not have "language." Marler's definition of calls is merely an irrefutable way to defend this earlier decision. Once he has decided "calls" are "indivisible" (on what possible grounds?), he is free to go ahead and do what he wants with them. My diagnosis of callists' thinking is that they have already assume a simpler-than-human basis for (other) animals. They have made a jump to thinking, suggesting that these calls are unitary and are about behavior which tends to be innate (part of the notion that other animals are "simple"). Calls are thus semantic, but in the sense of the very limited "intelligence" which these callists are willing to impute to (other) animals. In fact, on inspection of an oscilloscopic display of human and non-human "utterances", human sentences and animal "calls do not appear very different. (1967) How have Marler and others decided that the latter are indivisible? How did Marler conclude that animals' "incorporation of noun and verb function in the same indivisible signal greatly limits the possibilities ... to create new messages"? I believe this had to have been decided in advance. It may or may not characterize (other) animals' verbal output--who knows? (For an earlier version of the same story: Plato's Protagoras.)

19 (cont'd). I have attempted to parody this bent of callists to simplify the nature of (other)
animals in a paper ("Could a Non-H?" 1974a) speculating on whether an "outside" observer of the human species could possibly discover whether human kind have language. If the observer used the same assumptions and techniques which human beings use in "studying" the "calls" of (other) animals, he could not, I concluded--unless he were already willing to believe that we might have language. One suspects that the "callists" are not even aware that their "data base" is so heavily loaded with assumptions. My ultimate objection to the callists' thinking is that by tending to oversimplify (other) animals it has a parallel tendency to affect how we imagine human beings to be. The "human nature enterprise" or "border defense" is never far from the characterization of (other) animals. Statements such as Marler's above must be examined very carefully, not only for their basis in fact but also for their implications and entailments. (1975a)

20. One of the most fascinating aspects of studying (other) animals in their natural settings is that it is usually clear that we watch moving bodies. The fact that most behavioral scientists in the laboratory miss or dismiss the fact of bodies' moving is astounding to me. Of course the idea that human language provides a direct route into the human mind assists us in this most current annotation to Plato's banishment of time, the body, and (I suspect) the possibility of new knowledge about the human condition. (Chomsky 1968)

21. The "origin of language" problem tends to urge a sense of human language which is autonomous, language per se. Thence it is an easy jump to the study of "language" by whatever definition is "selling" as if it represents totally that which is uniquely and distinctly human.

22. A great deal of the discussion around this issue has to do with the issues of change and continuity; thus the earlier discussion of time and language. I suggest as an overarching strategy that we ought to assume change and attempt, at all moments, to account for (apparent) stability. This strategy has several advantages: (1) It will force us to examine
what we mean by ideal or normal essentialist modes of behavior; (2) it provides an existential antidote to the Platonic propensity to "fix" time; (3) it will force us to take certain aspects of the human condition (e.g. aging) and examine whether they are attributes of being or consequences of being social.

23. If one looks beneath the surface of the theories of many ethnologists, one may begin to note how heavily animal communication work is influenced by a "mentalist" orientation, particularly when it comes to interpreting (other) animals' behavior. The intellectual shift which they (e.g. Lorenz) are attempting is to take intellective functions and show that some or most are non-plastic, not susceptible to learning or other forms of change, thus innate, genetic, in some seep sense. It must be admitted that Darwin's expression of Emotions in Man and Animals sets up this possibility by assuming that "emotions" are inborn. It is no exaggeration to suggest that the "calls" of the modern animal behaviorist are akin to Darwin's "emotions". (cf Ekman 1975) It is not, however, sufficient to assume that the "emotions" are inbult, or even that we have direct access to knowledge about them. In the history of ideas, these emotions have been left in a kind of no-man's-land between "body" (animal) and "mind" (human), to be used as a convenient residuum whatever dualist mind-body theories are seen to be at impasse. In fact, many ethnologists "describe" (other) animal movement with very little sense for how animals move from a kiniesiological perspective. Most could not, for example, distinguish a "balance maintaining" movement from a "gesture". Even "careful" descriptivists, operating from a mentalist-dualist conceptual framework, can "disembody" the body while claiming to describe it. (1973a)

24. Human facial expression is part and parcel of the "origin of language" problem. If one assumes, as does Ekman (1975), following Darwin's Expression of Emotions . . ., that the face merely expresses a set (2,5,8, . . .1,000,000 ? ) of inborn emotions, the problem of understanding facial expression is but to separate the observed expressions into their "components". It seems to me, however, that this view is a consequence of the "origin of Language" issue: By oversimplifying (other) animals, we tend to see man as intrinsically simple. Man and (other) animals must be assumed to be complex--else we will not even see
what there is to see. The observer who is prepared (in his mind's eye) to see or to sort, say, eight categories of behavior, will not continue to grow in his observational capacities. Most behavioral scientists claim, in defense of simple-mindedness, that one cannot handle the enormous complexity; they want to simplify all for the sake of "management" and "control". In order for observers to get better at their trade, they must be prepared to see more at

24 (cont'd). all moments. This is true of any complicated skill in which mere practice is not sufficient to increase the skill (Here I speak as an amateur violinist). The human face remains poorly described, both in terms of its surface and of its underlying tissue!

25. The visual aspects of human behavior--and for that matter, tactile, olfactory, gustatory, kinaesthetic--have also not appeared very prominently in theories of human language. Vision is recognized as a sort of enabler, in the knowing of space and the external objective world. But vision tends to have been overlooked in thinking about language. Interestingly, the other senses seem not even to be thought of when it comes to ideas about language: Who has studied sentences as smell, touch, and the other adjectives?

26. Personal communication: Burton Shapiro, D.M.D., Ph.D., Chairman, Department of Oral Biology, University of Minnesota.

27. It may be stretching the point to suggest that mentation does not occur, as far as I can tell, with an untensioned tongue. At this very moment, the reader or hearer may note that the incredulity he may feel about this argument is as surely in his tongue as in his mind. It is also worth pointing out that people with peculiar tongues and/or peculiarly shaped internal
mouths are likely to appear "retarded" to most of us!

28. The claims that man's "mind" is "creative and infinite" are part and parcel also of the "origin of language" problem. It is, in one sense, merely another way of proclaiming man's uniqueness. Its theological relationships are clear: One has only to glance at the development of Aquinas' thought to see the mind become the soul via the argument of the presumed "infinitude" of language. If man is infinite because he was constructed in the image of God, it follows directly that (other) animals must be "finite", at least for the dualist. The creativity argument is similar, and claims that man (alone) is not tied down by his instincts. But this follows also from the notion of unboundedness, which infinity presumes. (Other) animals are bounded, unfree in their "thought". It should be noted in these particular forms of the "problem", that theology and politics tend to merge with great ease and little notice--subtle and slippery.

29. In my view, so-called "retarded" persons are not necessarily intellectually inferior to us "normals". In fact, it is the thinking which pervades the origin of language problem that leads us to think of them as deficient, more animaloid, thus stupider. We tend to apply this thinking to all the "less-civilized" peoples of the world, the "primitives", who have appeared to be intermediate between man and beast. Having observed mothers interacting with infant mongoloids (children with Down's Syndrome), I have reflected much about the nature of "retardation". This is a case where the perception of different faces leads us to believe that the minds behind these faces are different (and defective) as well. But if one is treated as if he is stupid or crazy by other persons, it would be difficult to determine whether the differences (in appearance and behavior) are due to inherent stupidity (e.g. "brain damage") or to how we tend to interact with persons whose appearance is "strange". How do people get to look the way they do? (1972, 1973a, 1974a)

30. Many modern linguists have been moving to the study of "semantics", away from
"syntax". Their error remains that they consider language to have some sort of autonomous existence. In the swinging intellectual pendulum--language and thought--we are moving rapidly toward the primacy of thought, language being how thoughts are expressed. A detailed analysis of language, as it is presently conceptualized, cannot possibly yield more than a set of directions on where and when to observe social interaction. Language is a process, not an entity. (1967) But our techniques of linguistic analysis have been attempts to fix time, not to account for how we might understand one another in the ongoingness of life. The "body" of language has been as effectively banished from the study of verbal communication as the body of man and woman from the study of human nature. Since thought construction obviously determines what we see to an amazing extent (if the "origin of language" problem is any example), more observation is not the answer. (1974e) In my view, the conceptualization of language (human or other) has been afflicted by the need to probe those aspects of speech which we believed to be uniquely human. This has always led to minimal theories about human language, and tends toward an oversimplification of the human condition, especially in politically pessimistic eras such as the present. The dignity and uniqueness of man do not require defense; they demand understanding. The "origin of language" problem cannot lead us to an increase of understanding but will always tend to push us into the political-theological framework which underlies the formulations of "The Problem".

References

Adler, M. J.

1967 The Difference in Man and the Difference It Makes (New York, Holt, Rinehart, &
Aristotle


Bronowski, Jacob


Busnel, R. F.


Cassirer, Ernst

Press).

Chomsky, Noam


Descartes, Rene

1951 *Meditations on First Philosophy* (New York, Liberal Arts Press).

Ekman, Paul


Gardner, Beatrice T., & R. Allen

Linden, Eugene


Lorenz, Konrad


Mead, George Herbert

1934 *Mind, Self, and Society* (Chicago, Chicago U.P.)

Miller, George A.

Nietzsche, Friedrich Wilhelm


Oyen, Ordean O.


Pegis, Anton C. (ed.)

1948 *Introduction to St. Thomas Aquinas* (N.Y., Random Hou

Plato
1928 The Works of Plato, I. Edman, ed. (N.Y., Mod. Libr)

Salus, Peter H. (ed.)


Sarles, Harvey B.

1967 The Study of Intelligibility, Linguistics 34, 55-64.


1970 An Examination of the Question-Response System in Language, Semiotica 2,


1971ms Maps, Journeys, and their social implications.
Sarles, Harvey B.


1972ms The Dynamics of Facial Expression. Paper at International Association on Dental Research.


1974d Language and Communication...II: The View from '74 (to be published in IV. Erindale volume on Communication and Affect, Plenum Press).

1974c Facial Expression and Body Movement, in Current Trends in Linguistics 12
(T.A. Sebeok, ed)


Simpson, G. G.


Stokoe, William C.


Waddington, C. F.

Whitehead, Alfred North


Wittgenstein, Ludwig


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