STRUCTURAL RELATIONSHIPS IN CHILDREN'S UTTERANCES: SYNTACTIC OR SEMANTIC?[1]

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Until recently, the investigation of children's knowledge of linguistic structure was based primarily upon analyses of the superficial form and arrangement of the words in their spontaneous utterances. In the last few years, however, there has been an increasing realization that we can discover much more about children's early linguistic competence if we take apparent meanings into account as well. It has been convincingly argued, especially by Bloom (1970), that children's utterances express a variety of structural relationships. Some of these relationships are not distinguishable purely on the basis of formal differences, however. As in the case of adult language, this gap between meaning and form can best be accounted for by postulating a distinction between deep and surface structure. The information which is necessary for assigning meanings to utterances is provided by the deep structure representations specified for them.

What is the nature of the deep structures of children's utterances? How should we characterize the structural relationships which children apparently intend? Attempting to answer these questions involves making judgments about what kinds of concepts and categories are functional in

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children's early linguistic competence, and perhaps also about what linguistic knowledge is innate as opposed to what must be learned.

The following discussion is divided into three parts. First some proposals which have been made concerning the structural relations of children's utterances are outlined. This is followed by an evaluation of certain aspects of these proposals, based primarily on data I have collected from two Finnish children, Seppo and Rina, and an American child, Kendall (Bowerman, 1973). Finally, I offer some suggestions and supporting evidence for a plausible interpretation of the kinds of concepts underlying children's earliest constructions.

SOME EXISTING PROPOSALS ABOUT THE UNDERLYING NATURE OF CHILDREN'S UTTERANCES

One important issue on which researchers differ is whether the underlying structural relationships of children's utterances should be given a syntactic or a semantic characterization. McNeill (1966a, b, 1970a, b, 1971) has used transformational generative grammar as outlined by N. Chomsky (1965) to describe child speech. This entails postulating deep structures which are basically syntactic. The syntactic description of a sentence serves as input to the semantic interpretation of the sentence. The syntactic deep structures of a transformational grammar provide information about both the hierarchical organization of sentence constituents, or constituent structure, and the grammatical relations which hold between these constituents. Many linguists (e.g., N. Chomsky, 1965, pp. 71–72; Katz & Postal, 1964, p. 159) believe that certain grammatical relations are fundamental to the structure of sentences in all languages. These include the functions *subject of the sentence*, *predicate of the sentence*, *verb of the verb phrase*, and *direct object of the verb phrase*. McNeill proposes that the existence of language universals results from the inherent characteristics of the child's capacity to acquire language. He suggests, therefore, that knowledge of the basic grammatical relations is innate, and guides the child's understanding and production of utterances from the beginning of language development.

In a contrasting view of children's initial linguistic knowledge, Schlesinger (1971) has proposed that the components of the structural relationships expressed by children's utterances are semantic concepts like *agent*, *action*, *object*, and *location* rather than syntactic notions like *subject* and *predicate*. He notes that these concepts do not reflect specifically linguistic knowledge, but, rather, are determined by the more general innate cognitive capacity of the child. Children acquire language by learning realization rules which map underlying semantic intentions directly onto surface structures. Schlesinger's model of language acquisition, while explicitly a production model rather

than a grammar, shares with the generative semantics accounts of grammar proposed by linguists such as Fillmore (1968) and McCawley (1968) the idea that semantic concepts are the primitive structural components of sentences. These are thought to be encoded by syntactic devices, rather than being themselves derived from the interpretation of more basic syntactic information.

In writing grammars for three American children early in their syntactic development, Bloom (1970) specified deep structures with the formal configurational properties which define the basic grammatical relations in a transformational grammar. Unlike McNeill, Bloom (1970, pp. 227–228) did not feel that knowledge of these relations is innate, but only that her subjects had learned some or all of the relations by the developmental points at which she placed her grammars. Elsewhere, Bloom (in press) has suggested that there is perhaps no important distinction between syntactic functions like subject of the predicate and object of the verb and semantic concepts like agent of the action and object of the action, since both are "necessarily linguistic categories, determined by formal criteria of arrangement and relationship." She adds that the important distinction to be made is not among "domains of linguistic categories," but "between *linguistic* categories —categories that are dependent on formal specification of relationship—. . . and *cognitive* categories which may be experientially defined in quite another way."

The debate about the underlying structures of children's early utterances may be more than terminological, however. There may in fact be an important difference between interpreting a child's construction such as *man drive car* as *subject-verb-direct object* and as *agent-action-object acted upon.* Determining whether or not children's early linguistic competence includes a knowledge of syntactic relationships and the constituent structure they entail has some important consequences for a theory of language acquisition.

Before examining these consequences, let us consider briefly the difference between syntactic and semantic concepts. Syntactic concepts are more abstract than semantic ones. A verb may take several noun arguments, each performing a different semantic function such as *agent*, *object acted upon*, *location*, *instrument*, and so on. Deep structure syntactic functions are not always associated with particular semantic roles. Fillmore (1968), for example, has shown that the deep structure subjects of English sentences play such diverse semantic roles as agent (as in **John** *opened the door*), object involved (**the door** *opened*), instrument (**the key** *opened the door*), person affected (**John** *wants milk*), and location (**Chicago** *is windy*). Direct objects likewise do not have a constant semantic function. The subject and direct object for any particular verb, however, identify noun phrases in particular

semantic roles. For example, the subject of the verb *eat* identifies the agent, while that of *want* identifies the person affected. Being able to implicitly identify the deep structure subject and direct object of a given sentence involves knowing which semantic roles function in these syntactic capacities for the particular verb involved. (See Brown, in press, for a further discussion of the differences between semantic and syntactic relationships.) What it means to understand an abstract syntactic function like *subject* is taken up in a later section.

Now let us return to the question of whether there is any essential difference between describing children's utterances in terms of syntactic relationships and in terms of semantic concepts. If we assume, with N. Chomsky, McNeill, Bloom, and many others, that adult competence includes knowledge of the basic grammatical relations, we must determine where this knowledge comes from. If we should find that knowledge of the basic grammatical relations is reflected in children's earliest utterances, it would at least be plausible to argue that this knowledge is not learned at all but rather constitutes part of children's basic capacity to acquire language. But if, in contrast, it turns out that these utterances are produced without a specific understanding of syntactic relationships but only with rules based upon semantic notions, we must then account for how the more abstract knowledge embodied in the basic grammatical relations is eventually attained. It is possible that achieving an understanding of the abstract, specifically linguistic relationships which hold between parts of sentences is an important part of the language acquisition process. If syntactic and semantic terms are not carefully distinguished and structural specifications like *subject-predicate* and *agent-action* are regarded as equivalent, we have no motivation to look for such a learning process.

EVALUATING PROPOSALS ABOUT CHILDREN'S DEEP STRUCTURES

How can we determine which interpretation of children's deep structures—the syntactic or the semantic—provides a closer approximation to the form of children's linguistic knowledge? Only by examining the data closely without preconceptions. A great advance in the study of child language was made in the early 1960s when several researchers (Braine, 1963; Brown & Fraser, 1963; Miller & Ervin, 1964) realized that children's word classes might not be the same as those of the adult language, and began to do distributional analyses of the words in children's constructions to see what classes in fact were functional. The same unbiased approach is needed now that we are looking at children's deep structures. We need to guard against assuming that children's deep structures have a certain form simply because an adequate description of the adult language must specify such a

form for equivalent adult utterances. We may find that those structural phenomena of adult speech which motivate the postulation of syntactic concepts like subject and predicate are absent in child speech. In my view, the evidence available so far does not appear to be strong enough to justify crediting children in the initial stages of syntactic development with knowledge either of the basic grammatical relations or of the constituent structure upon which these depend.

Constituent Structure

Let us first examine constituent structure. In representing children's early utterances, McNeill, Bloom, and Schlesinger all provide an account of constituent structure in which three-term strings like *man drive car* and *mommy go store* are hierarchically organized along the traditional lines. The initial noun (N) constitutes one constituent, while the verb (V) plus the direct object or locative element constitute another. McNeill and Bloom, but not Schlesinger, consider the former the subject and the latter the predicate. According to McNeill (1971), this hierarchical organization results automatically from the child's application to sentences of his knowledge of the basic grammatical relations.

What is the justification for this analysis of the constituent structure of children's early three-term constructions? N. Chomsky (1965) notes that there are various ways to justify assigning constituent structure. One must show, for example, that "there are perceptual grounds for the analysis," or that the postulated intermediate phrases "must receive a semantic interpretation," or "are required for some grammatical rule," or "define a phonetic contour [p. 197, fn. 7]."

The few attempts to use strictly linguistic criteria to determine the constituent structure of children's early utterances have had inconclusive results. For example, Brown (unpublished materials) asked whether Adam, Eve, and Sarah, his three English-speaking subjects, regularly used the predicate verb phrase as an answer to *what are you doing?* or *what is it doing?* questions, as adult speakers do. He found that the children often did not respond to these questions at all and almost never answered them appropriately. The same is true of Kendall and of my two Finnish subjects. Brown also tried to determine whether in Adam's speech the privileges of occurrence of V + N were the same as those of V alone, which might have suggested that V + N should be considered as a single constituent. He found that the privileges of occurrence were the same, since both V and V + N could occur after initial nouns or pronouns. This finding does not constitute sound evidence for a verb phrase (VP) however, since N + V, or the subject plus the verb, also had the same privileges of occurrence as V alone: both

could precede nouns or pro-locatives. Thus, on the basis of this test, either V + N *or* N + V could be considered a constituent substitutable for V alone. This was true not only in Adam's speech but also in that of my three subjects.

Other linguistic grounds which might be used to justify postulating a VP constituent in children's early utterances are also lacking. For example, children do not initially use phrases like "do (so)" which make reference to a preceding VP. In samples of speech from the earliest stages of word combining, one does not find sentences like *Daddy like cake. Mommy does too*, or *Johnny went home (and) so did Jimmy.*

In sum, no one has yet to my knowledge succeeded in demonstrating on purely linguistic grounds that the verb "belongs with" the direct object or the locative in child speech rather than, for example, with the subject—in other words, that verb plus direct object or locative is a constituent in a way in which subject plus verb is not. Arguments for a verb phrase constituent in children's utterances have been based on a weaker sort of evidence, evidence which bears only on the question of whether the verb plus the direct object or the locative element has a psychological unity for the child which the subject plus the verb lacks.

One such argument draws on the observation that verb–object strings are more frequent in early speech than subject–verb strings. This was true of Brown's subjects Adam, Eve, and Sarah and of Bloom's three subjects. McNeill (1970b) notes that the predominance of predicates without subjects over predicates with subjects in Adam's speech "would result if the sentences without subjects had existed in Adam's repertoire for some time [p. 1090]." McNeill (1966b, pp. 44–45) also suggests that children may initially practice subject noun phrases in isolation and only later realize that subjects and predicates can be brought together into one sentence.

According to this line of reasoning, which is based on the relative frequency of verb–object, subject–verb, and subject–verb–object strings in a speech sample, if some children from an early stage of development produced more subject–verb than verb–object strings, we might argue that for them, subject–verb had a psychological unity which verb–object lacked. Similarly, if even full subject–verb–object strings were more frequent than verb–object strings, perhaps subject–verb should be considered an initial unit to which object is added only later, just as McNeill suggests that verb–object is a unit to which subject is added later. These were, in fact, the distributional facts of the speech of my two Finnish subjects and my American subject. All of these children produced far more subject–verb than verb–object strings, and they produced either about equal numbers of verb–object and subject–verb–object strings, or more of the latter. Table 1 presents the relevant figures from samples of their spontaneous speech.

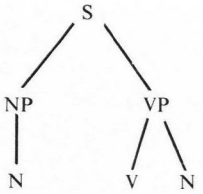
Table 1 *Frequency of Production as a Clue to Constituent Structure: Number of Utterance Types of Subject–Verb, Verb–Object, and Subject–Verb–Object Strings in Samples of Spontaneous Speech*[a]

	Kendall (English) MLU[b] 1.10	Kendall (English) MLU 1.48	Seppo (Finnish) MLU 1.42	Seppo (Finnish) MLU 1.81	Rina (Finnish) MLU 1.83
Subject–verb	19	31	25	64	21
Verb–object	5	12	4	9	4
Subject–verb–object	—	7	7	8	19

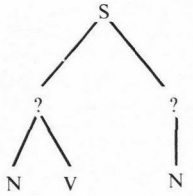
[a]All samples contained a total of 713 utterance tokens (both constructions and single words) from consecutive tapes, except for the first from Kendall, which consisted of 136 construction tokens (102 types) noted by hand over a period of almost two full days.

[b]MLU: mean length of utterance (counted in morphemes), a measure of linguistic maturity.

If we followed to its logical end the argument that constituent structure is revealed in the relative frequency with which these various strings are produced, we would have to conclude that for these children the hierarchical organization of sentence elements was not



but rather



—in other words, that the subject plus the verb constituted one constituent and the direct object another. Such an organization would be a false step toward the adult understanding of constituent structure which we assume they will ultimately attain.

Another sort of argument that predicates have psychological unity is presented by Braine (1971b). Like McNeill, Braine has suggested that the first English sentences consist of a predicate with an optional subject. He finds evidence for this in children's "replacement sequences," a term he uses to describe sequences of utterances in which a short utterance is followed or preceded by a longer string which incorporates it and suggests what grammatical relations are intended by it. Braine found that these sequences tend to consist of an utterance without a subject followed by the same utterance with a subject. For example:

chair . . . pussy cat chair
want that . . . Andrew want that
off . . . radio off
fall . . . stick fall
go nursery . . . Lucy go nursery
build house . . . Cathy build house

Replacement sequences also occurred, although relatively infrequently, in the speech of the two Finnish children and of my American subject Kendall. Some of these did involve producing a predicate and then adding a subject. But many involved instead the operation of producing a subject first and then adding the predicate, or, even more interestingly, of producing the subject and the verb and then adding a direct object or a locative. The following are some examples:

Seppo (translated):
horsie . . . horsie . . . horsie sleeps
chick . . . chick sings
mother . . . mother opens
daddy . . . daddy wash . . .
daddy . . . daddy already wash train
this belongs . . . this belongs there
Immi draws . . . Immi draws there
man captain . . . comes . . . (to) take-care-of . . . man
captain comes . . . (to) take-care-of . . . bird . . . man captain takes-care-of-bird.

Kendall:
'lissa . . . 'lissa . . . 'lissa . . . 'lissa write
Kendall . . . Kendall gone
Kristin . . . Kristin sit chair
Kendall innere . . . Kendall innere bed
Kendall pick up (O + V) . . . Daddy pick up (S + V) . . . Kendall (O) . . .
Mommy pick up Kendall (S + V + O)

To summarize, arguments about constituent structure which are based upon the relative frequency of production of different types of strings or upon the characteristics of replacement sequences are not conclusive.

Using these criteria on data from certain children leads to an analysis of constituent structure which specifies subject plus verb as one constituent and direct object or locative as another. It appears that frequency of production and the characteristics of replacement sequences may not be reliable clues to hierarchical organization. In short, we still do not know whether children produce their early subject–verb–object and subject–verb–locative constructions with the particular understanding of constituent structure which has been ascribed to them, or even with any concept of hierarchical organization at all.

The Grammatical Relation "Subject of"

What evidence is there that an understanding of the concept *subject of* is part of children's early competence? In transformational theory, the deep structure subject of a sentence is defined as the noun phrase immediately dominated by *S*. We have just seen that the analysis of constituent structure upon which this definition depends may not be applicable to children's utterances. If this is the case, then justification for crediting children with the concept *subject of* must come from elsewhere.

Why do we need the concept of deep structure subject for an adequate analysis of adult language? This is a difficult question. In my understanding, the answer might go something like this: In linguistic theory, the relationships which hold between underlying meanings and actual sentences are indicated by transformations. According to N. Chomsky's outline of grammar, the operations involved in transformations cannot be specified simply by reference to the semantic functions of words in sentences. For example, a rule for deriving passive sentences which specified that the word functioning as agent of the verb should become the object of the preposition *by* would be inadequate. Passives can also be created out of sentences in which there is no agent, like *your mother wants you* or *John sees Mary*. The constituent which becomes the object of *by* in passive sentences can only be defined in an abstract way, as a noun phrase with a certain syntactic function which we call *subject*. The semantic function of this noun phrase is different for different subclasses of verbs. The need for the concept *deep structure subject* arises because there are transformations—including the one which derives passive sentences—which treat certain noun phrases as though they were identical for the purposes of a particular operation, even though they do not necessarily have identical semantic functions in their respective sentences. Such transformations can cause deep structure subjects to appear in a number of different positions and different syntactic roles in surface structure. But if a person's competence is such that he knows what the deep structure subject of a sentence is regardless of its position and syntactic function in

surface structure, and if he knows what semantic role is associated with the grammatical function of subject for the particular verb involved, he will understand the sentence.

Fillmore (1968, p. 58) notes that some languages have been described as not having passives and others as able to express transitive sentences only passively. He argues that since these languages offer no choice of surface structure subject, the concept of subject is not applicable to them. To pursue this argument further, if a particular language lacked syntactic operations which treat a particular noun argument for each verb in the same way across a number of different verbs, and which could cause deep and surface structure subjects to differ, why would there be any need for the syntactic abstraction of *subject*?

The language of children appears initially to lack such operations. It has often been noted that children's early utterances can be generated almost entirely by the base component of a transformational grammar (Bowerman, 1973; Brown, Cazden, Bellugi, 1968, p. 40; McNeill, 1966b, p. 51). Virtually all constructions follow the simple active declarative pattern, although certain elements obligatory in adult speech are absent. Thus, no transformations need to be specified which require reference to a sentence constituent with the abstract syntactic function which defines subjects in adult speech. Deep structure and surface structure subjects are therefore always identical.

On what grounds can the abstraction of *subject* be made in the case of a language which lacks transformations requiring it? In simple active declarative sentences of adult English and Finnish, the particular noun argument of a verb which functions as deep structure subject (and therefore also as surface structure subject) governs person and number concord in the verb, is in the nominative case (pronouns only in English, nouns and pronouns both in Finnish), and has a characteristic position. In early child speech, subjects cannot be identified on the basis of either verbal concord or case, since verbs initially have an invariant form, personal pronouns are rare or absent, and (relevant only for the Finnish children) nouns in *all* syntactic roles are in the nominative, not just subjects.

This leaves only position as a basis for the abstraction of *subject*. The particular noun argument of the verb which functions as deep and surface structure subject in simple active declarative sentences typically occurs in preverbal position in both English and Finnish (other orders are possible as well in Finnish). This ordering is generally observed in children's early constructions. In studies of child speech, the noun which occurs in preverbal position is identified as the subject—provided that it would be considered the subject in adult speech too. But when the child produces constructions like *ball hit* and *apple eat*, we simply conclude that he has reversed the normal

verb–object order. We do not consider the possibility that he might have mistakenly identified the wrong noun argument of a particular verb as subject, perhaps by analogy with sentences like *the toy broke*, *the door opened*, *the page ripped*, or *the ball dropped*. All of these sentences involve verbs which can take a noun which functions semantically as *object acted upon* as either subject or direct object, depending upon whether or not an agent is also expressed. The verbs *hit*, *eat*, and many others do not have this flexibility. It is conceivable that a child might at first not recognize this distinction between verb classes, and so would assume that all objects acted upon can be subjects in agentless sentences. In summary, then, we do not even make consistent use of position to help us identify subjects in children's utterances, even though it is the only criterion we have available. Instead, we simply rely on our knowledge of what the subject would be in equivalent adult utterances.

Occupation of identical position is in any event not a sufficient reason to assume identical syntactic function. For example, in the sentences *John eats cake* and *John goes home*, the nouns *cake* and *home* occur in the same position, but they do not perform the same syntactic function. Similarly, why should the first words in typical child utterances such as *John eat cake* and *John want cake* be considered to perform the same syntactic function when their semantic functions are different?

To summarize, the structural phenomena which require the concept of subject in adult speech are evidently missing in early child speech. To credit children with an understanding of the concept is an act of faith based only on our knowledge of the characteristics of adult language.

A SEMANTIC INTERPRETATION OF CHILDREN'S DEEP STRUCTURES

The purpose of the foregoing discussion has not been to demonstrate that children initially lack knowledge of the basic grammatical relations and of the constituent structure which they entail, but only to show that there is as yet no evidence in their spontaneous constructions that they have it. It is possible that children use this knowledge in their comprehension of adult sentences before their own productions begin to reflect it, but this has not been demonstrated.

Finding compelling support for either a syntactic or a semantic interpretation of the structural relations expressed in children's early utterances will probably require experimental study. Of particular interest will be information about the levels of abstraction at which children make generalizations to form novel constructions. However, nonsystematic evidence which suggests one interpretation or the other for particular children may

be obtainable from samples of spontaneous speech. For example, if a child initially began to observe inflections or verbal concord only for agentive subjects, this would suggest that *agent* rather than *subject* was a functional concept for him. One bit of evidence of this sort comes from a Russian child, Zhenya (Gvozdev, 1961). Initially, Zhenya did not formally mark direct objects, but rather used the nominative form of the noun in all syntactic functions. When he began to acquire the accusative case, he used it only to mark those direct objects which designated the objects of action, particularly those occurring with verbs referring to the transfer or relocation of objects, such as *give*, *carry*, *put*, and *throw*. At this time, Zhenya rarely marked the direct objects of verbs like *read*, *draw*, and *make*, in which the relations between action and object are more complex. This pattern of marking indicates that at first Zhenya did not regard all direct objects as functionally equivalent, but only that subset of them which referred to objects acted upon in certain rather direct ways.[3]

Cross-linguistic comparisons of children's speech may also yield information about the concepts which are functional early in linguistic development. Striking similarities in the constructions of children learning unrelated languages provide some support for a semantic rather than a syntactic interpretation of the deep structures of early word combinations. The most common productive construction patterns across languages involve a fairly small set of relationships, which have been described in the literature in semantic terms such as *agent–action*, *action–object acted upon*, *object located–location*, *possessor–possessed*, and *demonstrator–demonstrated* (see Bowerman, 1973; Brown, in press; Slobin, 1970, for further discussion).

While these relationships can be given syntactic interpretations as well as semantic ones, the semantic descriptions often provide a more exact characterization than their syntactic counterparts. For example, the words in children's earliest utterances which appear to function syntactically as subjects or direct objects initially play a more restricted number of semantic roles than they do slightly later in development and in adulthood. Table 2 illustrates this observation. It lists the frequencies with which two- and three-term constructions expressing subject–verb–object relations in various semantic roles were produced in samples from my two Finnish subjects and one American subject, and from two Samoan children (Kernan, 1969). The samples are arranged by increasing MLU (mean length of utterance counted in morphemes, a measure of linguistic maturity). At the lower MLUs, there is a very strong tendency for sentence subjects to have an agentive relationship to the verb. Expressed in a different way, the verbs children initially use in subject–verb combinations are those which take agentive subjects—for

[3]I am grateful to Dan I. Slobin for bringing this example to my attention.

Table 2 *A Cross-Linguistic Comparison of the Syntactic and Semantic Relationships Expressed in Early Subject–Verb–Object Constructions*[a]

Syntactic relations	Semantic relations	Kendall (English) MLU 1.10	Seppo (Finnish) KLU 1.42	Kendall (English) MLU 1.48	Sipili (Samoan) MLU 1.52	Tofi (Samoan) MLU 1.60	Seppo (Finnish) MLU 1.81	Rina (Finnish) MLU 1.83
Subject–verb	agent–action	19	25	28	3	10	60	19
	person affected[b]–state	—	—	1	—	—	2	1
	object involved[c]–action	—	—	2	—	6	2	1
Verb–object	action–object acted upon	2	3	6	6	16	8	3
	action-object created[d]	—	1	1	—	—	1	1
	state–object[e]	1	—	1	—	—	—	—
	action–object	2	—	4	—	1	—	—
Subject–object	agent–object acted upon	1	3	—	—	—	2	3
	agent–object created	1	—	2	—	—	1	—
	agent–object	3	—	—	—	—	—	—
	noun–(has)–noun	2	—	2	—	—	—	—
Subject–verb–object	agent–action–object acted upon	—	7	7	—	1	8	9
	agent–action–object created	—	—	—	—	—	—	4
	agent–action–object	—	—	—	—	—	—	1
	person affected–action–object	—	—	—	—	—	—	4
	person affected–state–object	—	—	—	—	1	—	1

[a] Utterance types only (not tokens). All word orders of a given construction pattern are counted.

[b] Fillmore's Dative case, with verbs like *want*, *see*, *receive*, *be afraid*.

[c] Fillmore's Objective case, with verbs like *fall*, *break* (intransitive).

[d] Fillmore's Factitive case, with verbs like *make*, *draw*.

[e] *Object* has been used as a neutral term to designate the direct objects of verbs like *want*, *look at*, *see*, *leave*, *find*, *read*, and *receive*, which are difficult to characterize semantically.

example, *sleep*, *drive*, *eat*, *sit*, *sing*, *ride*, *go*, and *open*. Children's lexicons at first include only a handful of verbs which take persons affected or objects involved as subjects (e.g., *want, see, fall*), and these are often used without explicit subjects. In particular, states like *want* are rarely predicated of persons other than the child himself, so these verbs usually appear without subjects or at best are paired only with the child's name.

This suggests that children are initially not seeking the means of expressing the grammatical relation between subject and predicate but rather, more concretely, of expressing the interaction between an agent and the action he initiates. As MLU increases, more verbs which take nonagentive subjects come into use, and are increasingly frequently paired with noun or pronoun subjects referring to inanimate objects or to beings other than the child himself. Examples of such sentences are Seppo's *tower falls-over* and *mouse is–afraid*, Rina's *Rina receives cake*, and Tofi's *baby wants clothes*. It is difficult to decide whether the number of different semantic notions the child is working with has simply increased at this point or whether the more abstract and inclusive concept of *subject* has now become functional.

The case for a semantic interpretation of direct objects is less strong. In adult English and Finnish—I don't know about Samoan—direct objects can designate an object receiving the force of an action (*John hit* **the ball**), a person affected (*John murdered* **George**), or an object created (*John built* **a table**; *Rina draws* **a horse**). Direct objects play other semantic roles as well which are more difficult to characterize. I have grouped the direct objects of verbs like *want*, *look at*, *see*, *leave*, and *receive* together simply as *object* for lack of a better way to describe them. There is a tendency throughout the samples for direct objects to designate objects physically acted upon, but this is not so strong as the initial tendency for subjects to designate agents, nor is there the same sort of developmental trend towards diversification as there is for subjects.

These comparative data suggest that *subject* and possibly *direct object* are more powerful and abstract than the concepts which children use early in their linguistic development. The linguistic knowledge which underlies the earliest two- and three-word constructions may be no more complex than simple rules to order words which are understood as performing various semantic functions. In some constructions, a semantic relationship may be expressed simply by words occurring together without a characteristic ordering.

According to this view of language acquisition, children's initial efforts at word combination result from their discovery of ways to express various semantic relationships in the language they are learning. These semantic relationships are similar across languages because, as Schlesinger has proposed, they originate in the way human cognitive abilities process non-

linguistic experiences common to children everywhere. Children may be able to grasp the concept *initiator of an action* before the concept *person affected by a state or stimulus* becomes available to them. This would account for their early preference for verbs which name actions and require agents in the role of subject.

Of course, the semantic categories I have mentioned are not necessarily the particular ones children use. They are abstractions, although not at such a high level as syntactic concepts like *subject*, and perhaps children do not even make these abstractions. Possibly, for example, an individual rule is made for each verb specifying that the name for the one who initiates the particular action of the verb, such as eating or driving, precedes the name for the action. An abstraction could also be made at some intermediate level between the initiators of particular actions and the concept of agent.

When the deep structure relations expressed in children's early constructions are given a semantic interpretation, the question arises of how N. Chomsky's level of syntactic deep structure is acquired, if, in fact, it is acquired at all. Several investigators have argued that learning theories cannot account for the acquisition of information represented only in deep structure, since this is abstract and never directly exhibited in the speech to which the child is exposed (e.g., Bever, Fodor, & Weksel, 1965; McNeill, 1971). In particular, McNeill (1971) has argued that because the basic grammatical relations "can be consistently defined only in the deep structure of sentences, they are beyond the reach of any linguistic experiences a child may have [p. 23]."

Some researchers who advocate a semantic interpretation of children's early utterances, such as Schlesinger (1971) and Kernan (1970), resolve the problem of how children can learn something which is never directly represented in speech by arguing that they do not have to—that an abstract syntactic level of deep structure does not exist. Acquiring a language simply involves learning how to translate semantic intentions directly into surface structures.

Doing away entirely with syntactic deep structures need not be the inevitable outcome of a theory of language acquisition which holds that most aspects of linguistic structure are learned rather than innate. As Ervin-Tripp (1971) observes, "the weakest argument of all is the notion that if we cannot think of a way to teach something, it must not be learned or learnable [p. 190]." It seems plausible, both intuitively and on the basis of a certain amount of experimental evidence, that certain abstract representations of linguistic structure are included in a speaker's knowledge of his language, even though these may not correspond exactly to those outlined by Chomsky and may be at an intermediate level between a semantically described deep structure and the surface realization of sentences.

The argument that the basic grammatical relations are unlearnable simply because they are definable only in the abstract underlying representation of sentences is not very convincing. If we accept this, we must agree that all aspects of deep structure are unlearnable for the same reason. But many aspects of deep structure, as specified in transformational generative theory, are language-specific, such as the underlying order of constituents. If the deep structure representation of sentences is to be considered part of adult competence, we can only assume that these language-specific aspects of deep structure are learnable. To argue otherwise would be to support the untenable position that children are born with a bias toward acquiring the particular language they in fact learn. And if children command some process of learning powerful enough to make these abstractions purely on the basis of linguistic experience, why should the same process not also be able to deal with abstract concepts which are believed by some to be universal, such as the basic grammatical relations?

There is, in any event, some evidence that the basic grammatical relations themselves are not universal. As we noted, Fillmore (1968) observed that certain languages do not offer a choice of subjects and therefore appear to lack the process of subjectivalization. If, in fact, the subject–predicate division is language-specific, we must rule out the possibility that it constitutes part of children's innate knowledge.

It is possible that children can acquire an understanding of the basic grammatical relations through an increasing comprehension of the way various semantic relationships are formally dealt with in their language. The concept of *subject*, for example, might develop in the following way: the child initially formulates rules specifying that words designating initiators of actions precede words designating actions (or, alternatively, that the name of the one who initiates a particular action precedes the name of the action). As the child acquires verbs which take nonagentive noun arguments as subjects, he learns additional rules for the placement with respect to the verb of words performing such semantic functions as *person affected* and *instrument*. The concept of *subject* emerges when the child eventually realizes that nouns in various semantic roles are treated identically for different subclasses of verbs not only with respect to position but also with respect to transformational possibilities, and thus have an equivalence of function at a higher level of abstraction than the particular semantic functions they perform.

Parental speech may play an important role in the child's acquisition of abstract syntactic concepts. A study by Drach (1969) indicates that the sentences mothers direct to their children may be shorter, more grammatical, and syntactically simpler than those they address to other adults. Ervin-Tripp (1971) speculates that these speech modifications could make

apparent "the phrases which comprise the basic units of language" and aid the child in recognizing constituent structure. A study by Pfuderer (1969) suggests that the syntactic complexity of mothers' utterances increases as their children mature. Such an increase in complexity could provide a sort of programmed text for introducing the child gradually to progressively more abstract and difficult syntactic relationships.

A mother may even unconsciously modify her speech in a way which facilitates the child's initial search for consistencies in the expression of semantic concepts and which perhaps even suggests to him which semantic concepts he should consider important. An analysis of a sample of 1000 utterances addressed to Seppo by his mother, taken from consecutive tapes, revealed that verbs which take agents in the role of subject occurred five and one half times as frequently as all verbs which take other semantic concepts as subjects combined (Bowerman, 1973). Unfortunately, control data are not available to indicate whether this emphasis was stronger in the mother's speech to Seppo than in her speech to adults. If it was, then it would seem that the agent–action relationship was especially heavily modeled in the input to Seppo, and other semantic versions of the subject–verb relationship which might initially have confused him were kept to a minimum.

SUMMARY

According to the view of language acquisition I have sketched, the linguistic knowledge which lies behind children's initial attempts at word combining may not and need not include information about the basic grammatical relations or the constituent structure they entail. There is, in any event, no compelling evidence as yet that it does. The characteristics of cross-linguistic data suggest the alternative view that children launch their syntactic careers by learning simple order rules for combining words which in their understanding perform semantic functions such as *agent*, *action*, and *object acted upon*, or perhaps other even less abstract semantic functions. Through additional linguistic experience a child may begin to recognize similarities in the way different semantic concepts are formally dealt with and to gradually reorganize his knowledge according to the more abstract grammatical relationships which are functional in the particular language he is learning.