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Evaluation of Theories
on Child Grammars

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EVALUATION OF THEORIES
# ON CHILD GRAMMARS

by

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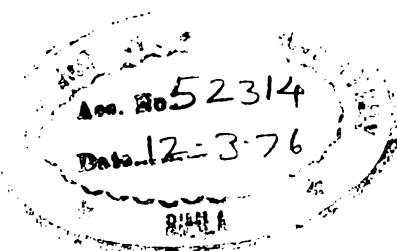
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SUMMARY

The purpose of this study will be to discuss three different theoretical starting points for analyses in the field of language acquisition, and ultimately to discuss and to evaluate the explanatory power of these theories. These kinds of analysis are:

(i)   the analysis by means of the pivot-open distinction as proposed by Braine (1963), McNeill (1966a, b; 1968; 1970a, and b) and others;

(ii) the purely transformational analysis as used by Menyuk (1969), Bloom (1970) and Gruber (1967);

(iii) telegraphic speech (a mere practical nomenclature for a group of studies presented by Brown and his colleagues).

Needless to say none of these analyses would occur separately but, on the contrary, in each kind of analysis, combinations of all three are used.

Every study whose aim is to arrive at a valid description (a) of child language at each stage of its development and (b) of the processes underlying the development must meet certain general criteria.

In this study a number of criteria are developed that are drawn from the field of linguistics and psycholinguistics. These requirements are applied in the evaluation of the three above mentioned approaches to child syntax; and for that reason they will be called evaluation criteria from now on.

The following general conclusions are drawn:

(1)   The pivot-open distinction ought to be rejected, not only as being non-linguistic but also for theoretical methodological

reasons. In addition there is also experimental evidence for rejecting it.

(2) The purely linguistic analysis as presented by the transformational generative theory has some shortcomings in its application to language acquisition which need not, however, be insuperable if the theory can be modified and extended somehow or other.

(3) The more psychological notion of TELEGRAPHIC SPEECH is not bound to any linguistic theory but can be considered to be complementary to a purely linguistic theory of language acquisition. For that reason this notion seems to be highly attractive to a linguist who wants to design a psycholinguistic competence model that has enough power to explain the process of language acquisition.

CRITERIA TO BE USED IN THE EVALUATION OF PSYCHOLINGUISTIC DESCRIPTIONS IN THE FIELD OF LANGUAGE ACQUISITION

1.0 SOME INTRODUCTORY REMARKS

In trying to evaluate current proposals on language acquisition there are a number of disciplines which must be taken into account, viz. biology, linguistics, psychology, psycholinguistics, and developmental psycholinguistics.[1] Of course, one can restrict oneself to one or two of these disciplines, but in that case one ought to be aware that the basic assumptions must not contrast with the findings of the neglected disciplines. In this chapter I will discuss only those criteria that can be derived from linguistics and developmental psycholinguistics. The main questions that ought to be answered in language acquisition research are namely:

(i)   what is acquired at a particular stage of language development?

(ii) how is it acquired?

which can be answered respectively by a linguistic and a developmental psycholinguistic analysis. It will be clear that the first question can only be answered by a linguistic description, if this description is sufficiently rich to indicate all syntactic and semantic (= cognitive) information. In order to account for such a valid linguistic description we will take THE CHILD as a rather abstract and technical term that means something similar to 'the ideal speaker and hearer' in the adult model; that is to say 'the child' is presupposed to have perfect and intuitive knowledge of all features of his language. Basic for such a standpoint is the assump-

[1]   This latter term is chosen by McNeill to indicate the research area within psycholinguistics that is concerned with the process of first language acquisition.

tion that the ideal hearer and speaker of a certain language knows all features of that language.

Furthermore, one ought to take the view that the language spoken by the child at a particular stage of development should be considered to be just a special member of the set of all human languages, which in turn means that the universal aspects of language can be presupposed also to be present in the language of the child. This view can be justified by the fact that child language is a communicative system that possesses the essential properties of all adult languages, such as generative capacity, recursivity (although in a primitive way), etc. Furthermore (see also McNeill 1966), the child develops linguistic rules that are independent of the adult model; therefore, child language cannot be considered to be a communicative system dependent on or derived from the adult model.

A final argument is a methodological one. Under the presupposition that any linguistic analysis is based on theories drawn from adult language, one could not justify the relevance of such linguistic analysis to child language unless one assumed that child languages possess the universal features common to adult languages. Actually this view is hardly doubted in modern literature on child language.

The second question deals with psychological problems like learning processes, memory, cognition, etc. In this study I would like to restrict speculations about such matters as much as possible. I will merely give those criteria which are necessary for a more linguistically oriented analysis of child language.

Finally, it ought to be mentioned that the criteria that are developed in this chapter are interrelated with each other and can be considered as a framework for research in language acquisition.

1.1 THE LINGUISTIC CRITERIA

In this section I will try to develop a framework for the linguistic description of child language that can also be regarded as a set of

linguistic criteria that ought to be met in studies of child language in order to arrive at linguistically valid descriptions. Such descriptions can be postulated to have not only descriptive adequacy – describing all data that were uttered at a certain stage of the child's linguistic development – but also explanatory adequacy – indicating all possible but not actually uttered sentences of the child at that stage. This means what is sought is a linguistic framework that has more general validity than just the description of observed child utterances. Rather, this framework has to take into account the universal aspects of natural languages. This has also to be the case because the language of the child at all stages of its development is a language like any other human language, as argued above.

As will become evident from this chapter, I am greatly indebted to the transformational generative theory, as it was developed by Chomsky until 1965.

However, some modifications and extensions of this theory will be discussed in the next paragraphs. They all have to do with Chomsky's later modification of the theory (1967) and with Campbell and Wales' (1970) extension of the theory of competence.[2] Furthermore, it is interesting to note that all the studies evaluated here are based on Chomsky's theory (1957 and 1965), thus much criticism will be internal. Finally, it ought to be mentioned that the linguistic criteria in as far as they agree with the transformational standard theory will only be dealt with briefly; for a more extensive discussion of those topics I refer to the publications of Chomsky, to Katz and Postal (1964) and to other studies mentioned in the notes.

i. *The generative character of child grammars*

If one considers the language of the child at some stage of its development as a natural human language one can define this language as a finite or infinite set of sentences. In the sentences used by the child many regularities can be observed in terms of

[2]   See also Hymes (1971).

classification, relations, word order, etc. – in other words in terms
of structure. According to linguistic theory structure ought to be
described by means of generative systems, that is to say by means
of systems (=grammars) that are capable of making explicit and of
formalizing the structure of sentences. Therefore, generative
grammars have as their first and main task to present a FORMAL
DESCRIPTION of the system of rules underlying all sentences. This
system can be considered to be a kind of knowledge that one puts
to use in actual performance somehow or other.

ii. *Explicitness and structural description*

If one agrees with the assumption that child grammars ought to be
generative one will have to be fully aware what such a view actually
means; a generative grammar[3] means a system of rules that in some
explicit and well-defined way establishes which sentences are
grammatical and which are not and assigns structural descriptions
to sentences. This leads to the following requirements for the
linguistic analysis;

(a)   all constituents, linguistic classes, and subclasses ought to
      be made explicit;
(b)   all functions and relations ought to be made explicit in one or
      another way;[4]
(c)   not only ought constituents, classes, subclasses and relations
      to be made explicit but also all semantic aspects (or cognitive
      aspects, as Chomsky sometimes calls them).

It is self evident that these requirements ought to be met one way or
another in the description of child language.

iii. *The creative aspect of language use*

The creative aspect of language use is an essential property that can
be met in all languages. Because of it the language user is able to

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[3]   Chomsky (1965: 8).
[4]   See also Dik (1968) and Fillmore (1968) for discussion.

produce infinitely many sentences with a finite amount of linguistic means. Under the presupposition that sentences express thoughts one can also say that language provides the means for both expressing infinitely many thoughts and also for reacting appropriately in an infinite range of new situations.[5] Formulated this way, the creative aspect can apparently be regarded an extension of the generative capacity, because no provisions are actually made by Chomsky to account for the specific requirements of the creative aspect. That is to say: the generative grammar is able to generate among all other sentences the particular one that expresses the appropriate thought or the appropriate linguistic reaction in a certain situation. The choice mechanism that causes the appropriate sentence to be produced by the speaker is regarded apparently as belonging to the performance. One can, however, also take another interpretation, as for example is elaborated by Campbell and Wales (1970) and Hymes (1971): they extend the notion of competence in such a way that the above mentioned choice mechanism also belongs to it.[6]

One could ask what kind of information about the speaker and about context and situation one has to take into account within linguistic description in order to be able to explain why the speaker selected this particular sentence out of the set of all possible sentences in this particular context, situation and environment. In my opinion, at least the principles underlying adequate communicative speech should be accounted for in a linguistic description of child grammar.

There is also a practical reason why one ought to rely on the extended notion of competence for research in the field of language acquisition. It is because one has to analyse performance data in order to arrive at the description of the underlying system of rules and these data are substantially determined by context and situation.

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[5] See Chomsky (1965: 6) and Chomsky (1964 and 1966).
[6] The term for this extended notion is communicative competence or social competence.

iv. *Universality*

In current linguistic theories the language universals take a central place. By this term is meant linguistic features which are common to all languages. Because the language of the child is actually a language one will have to look for the universals. There are other possible reasons which would motivate the study of the universals of language in child language:

(1) because children are able to learn any language, it is highly attractive to hypothesize that children have universal strategies for language learning. Some of these are relevant for all languages, for example the strategy identifying S.V.O., and others are only relevant for specific languages like the strategy identifying inflections;

(2) if the hypothesis of (1) is correct it will be evident that the universal strategies are more attractive for study than the language specific ones;

(3) it is necessary to distinguish in the analysis of child language between the linguistic features that are language specific and those that are universal, because the strategies that are assumed to be present for learning the 'language specific features' cannot be applied in every other language.

For the evaluation of studies on child language it is probably interesting to divide the universals into formal and substantive universals.

SUBSTANTIVE UNIVERSALS concern the vocabulary[7] for the description of language; for example what syntactic categories (nouns, adjectives, verbs, particles, etc.), what distinctive features etc. are necessarily present in all human languages.

The FORMAL UNIVERSALS characterize the rules that are used in grammars and the manner in which these are applied; for example rewriting rules, the cyclic nature of transformational rules, and labelled bracketing. It will be evident that statements like Brown

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[7] What is meant is a vocabulary of symbols to represent features, items, classes, and categories at each level of linguistic description.

and Bellugi's (1964) that the major category NP is a psycholinguistic reality for the child is more powerful if this statement can be proven correct for all child languages. Another subject that is relevant for the discussion on this topic is the status of word order and of inflection. In particular the former one has actually often been taken as a universal learning strategy.

v. *The description of word order*

As mentioned above, word order features often in the discussions on universal language learning strategies. The problem of word order is also relevant in linguistic theory.

In the standard transformational theory the order of elements is discussed at two levels. In the first place, it has been stated that the rules of the categorial component determine the order of elements in deep structure. Because of the fact that deep structure is generally considered as universal,[8] one can speak of the natural order of elements and of 'universality of order of elements'. However, this standpoint has been questioned more than once, for example in Curry (1961), Saumjan and Soboleva (1963) and more recently in Staal (1968), who actually propose set systems (in place of concatenation systems); which implies that according to them the categorial component does not determine the ordering of elements. In the second place, there are transformational rules (these rules are language specific) which can reorder elements in various ways.

For the moment the status of the order of elements is not quite clear. It can be doubted whether universality can be claimed, unless this universality is interpreted to mean:

    i. the order of elements exists;
    ii. the realization of the order of elements is language specific.

That a totally free order of elements is hard to establish is demonstrated by Tervoort (1968) for sign language: a language that is

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[8] Bach (1967, 1968, and 1971); Chomsky (1965: 118).

often supposed to have a free order of elements. He found that 48 permutations of a child sentence of 5 'signa' were perfectly grammatical and all had the same meaning and that all other permutations weakened the coherence and were ambiguous.

It will be evident that a valid description of child language has to account for the problem of word order. It is, however, uncertain for the moment whether word order can be regarded as universal and for that reason whether a language learning strategy based on word order is universal.

vi. *Operations like question and imperative*

According to Chomsky's theory as proposed in *Syntactic Structures* (1957), a kernel sentence is a sentence that can be regarded as generated by application of phrase structure rules and obligatory transformations alone. (In the 'Aspects'-model the problem of the kernel sentence is left out of consideration.) It is even to be doubted whether the kernel sentence, for example the simple, active, affirmative declarative (SAAD) sentence always is simpler than its passive, negative, or interrogative counterparts. Fodor and Garrett (1966) demonstrated for example that frequency of occurrence, length of the utterance (for example *Peter is hitting John* vs. *Harry is hit*), and semantics must be taken into account. Bever, Fodor and Weksel (1965) took issue with these problems especially in as far as child language is concerned.[9] However, their remark that the kernel sentence is not a sentence, can be proven to be false (see Chomsky 1957: 61).

The incorrect assumptions mentioned above that SAAD sentences are the simplest sentences, served many times as starting points in psycholinguistic research. An adequate theory of language acquisition ought to take into account that the declarative sentence can not be taken as the most important sentence type to occur in child language. This means that the so-called psychological

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[9] See for discussion also Hayes (1970), Brown and Hanlon (1970). Seuren (1969) proposes a descriptive system in which problems like the interrelation between the kernel string (= nucleus) and its operations are accounted for.

primacy of the declarative sentence can not be taken as a starting point for language acquisition research for the moment, and that a language learning theory based on this primacy has not been proven to be valid.

It is very interesting to see how such operations as question and imperative are realized at each different stage of development of the child, because the child has originally no inflectional or morphological means and probably also no word order rules at his disposition to realize these operations.

vii. *Transformations and semantics*

Katz and Postal (1964)[10] adopted the general principle that the only contribution of transformations to semantic interpretation is that they can interrelate phrase markers. This means that the combination of already interpreted phrase markers is the only new information added by transformational rules. It follows then, that transformations can neither introduce nor delete meaning-bearing elements.

In Chomsky (1965: 134-38) the notions of 'generalized transformations', 'transformation marker', and 'embedding by means of transformations' have been abandoned. Instead of the principle of embedding by means of transformations, it is accepted that the string $\#$ S $\#$ appears on the right in certain rules of the categorial component. The structures generated by the revised base are called generalized phrase markers. These markers do not only contain the same information as the separate phrase markers in the Katz and Postal version but also the semantic information that could be derived from the embedding transformations. In other words: ALL SEMANTIC INFORMATION OUGHT TO BE REPRESENTED AT THE PRETRANSFORMATIONAL LEVEL BY MEANS OF DEEP STRUCTURES. Although Chomsky (1972) now rejects it, I decided upon this standpoint because it leaves open the way to the theory of generative semantics. Another reason to assume a deep structure that rep-

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[10]   See also Chomsky (1965: 132).

resents all semantic information is that such an assumption might possibly distinguish between the cognitive underlying structure and surface structure, or as McCawley formulates it: between the message and the code. The distinction probably allows for a deeper analysis of the child's utterance, viz. for an analysis in which the semantic intent and the realization of the child utterance can be accounted for.

1.2 EVALUATION CRITERIA DRAWN FROM THE FIELD OF LANGUAGE ACQUISITION

Most studies on child language are observational and longitudinal. The usual procedure applied in language acquisition research is to design and write for successive periods, grammars that are capable of generating all observed sentences (that is, utterances) of each period. Comparison of such successive grammars provides data about the process of language acquisition. The linguistic criteria summarized in 1.1 can serve for designing and writing the successive grammars. Linguists usually restricted themselves to writing successive grammars, whereas psychologists on the contrary were concerned with the comparison of these grammars. From a linguistic point of view, however, it is necessary to postulate some prerequisites previous to the fitting of linguistic proposals into the framework of successive grammars.

i. *One linguistic theory*

All successive grammars ought to be based upon just one linguistic theory, in order to obtain explanatory adequacy. This means for instance that a linguistic description of Period I can not just rest on, for example, word order or classification and the description of the following period just on functions and relations.

ii. *The prognostic value of grammars*

The grammars under discussion ought to be prognostic in order to be valid descriptions of the child's linguistic competence at partic-

ular moments. This means that a grammar of a certain period, in order to fit into the framework, not only has to have the capacity to generate all observed utterances of that period but also has to prove consistent with the specifications of its rules, which are developing in the grammar of a subsequent period. If not, then there is methodologically no justification for the grammar under discussion. This point can be considered a methodological elaboration of McNeill's notion of 'generic'.

iii. *Discourse features*

Language acquisition research needs a theory concerning the analysis of discourse features, because first of all, this research is mostly engaged with actual performance, that is utterances used within a given context and situation; secondly child language is much more dependent than adult language on context and situation. Many of the child's utterances are totally incomprehensible without taking these factors of the speech event into consideration. Thirdly, in order to bridge the gap from actual performance to the competence of the child it is necessary to take some knowledge of context and situation into account; fourthly, telegraphic speech (i.e. a term derived from the fragmented character of child speech) can only occur and be understood if the environment has enough disambiguating power. One reason that child language is dependent on context and situation more than adult language is, is the fact that the child is FORCED to rely upon context and situation (because of limitations of memory span, and of vocabulary and grammar as well) in actual performance, while the adult on the other hand is able to abstract to a certain degree from context and situation. In other words the child's utterances are necessarily fragmented; the adult's utterances on the contrary are generally well-formed.

iv. *Non-verbal behaviour*

As an extension of i, ii and especially of iii, the child's disambiguating non-verbal but communicative behaviour like gesture, mimicry and intonation ought to be accounted for.

v. *Psychological function*

A linguistic analysis concerning child language and language acquisition cannot achieve validity unless those psychological functions that are relevant to the developmental processes they are dealing with have been taken into account, such as perception, concept formation, and memory span. For example, it can be questioned whether the child has some knowledge of inflection if it is known that the understressed parts of speech are not perceived.

vi. *New linguistic features within development*

A linguistic theory that wants to lay claim to validity for language acquisition ought to be capable of accounting for new linguistic features in the linguistic development of the child such as for example naming, two and more word utterances, pronouns, desiderative auxiliaries, inflections, etc.

Complementary to this requirement one could say that the theory ought to be capable of indicating and justifying the boundaries between the subsequent periods of language acquisition.

vii. *Primary linguistic data*

A final criterion which language acquisition research ought to meet is the presence, or, negatively, the absence of analysis of primary linguistic data.[11] Despite the fact that in many studies on child language the role of the primary linguistic data has been underestimated,[12] I would like to stress its relevance,

(1) because the child learns exactly that language that is presented in his environment with all its syntactic and phonological peculiarities, and

[11] By these data are meant in this study just those sentences spoken by adults to the language-learning child. See Brown and Bellugi (1964) for discussion.

[12] See for example Chomsky (1965), Gruber (1967), Menyuk (1969), and McNeill (1966 and 1970).

(2) because the analysis of these data can evaluate the findings of language acquisition research based on the analysis of observed child utterances only.

For the above mentioned reasons a comparison between the analyses of primary linguistic data and that of the observed child utterances will be unavoidable.

THE PIVOT-OPEN DISTINCTION

2.1 SURVEY OF LITERATURE

2.1.1 *Braine* (1963a)

The terms PIVOT and OPEN have been introduced in modern literature on language acquisition by Braine in his study "The ontogeny of English phrase structure: the first phase" (1963).[1] He found that the two word sentences of the child learning his language seem to be composed by selecting words from two provisional classes: the pivot class and the X-(open) class.

The words belonging to the pivot class could be characterized as follows:

i. they occur very frequently;
ii. they are small in number;
iii. they have a fixed position in the child's sentence;
iv. most of the pivot-words cannot occur in a one-word sentence.

There is some resemblance with the adult closed classes of words like pronouns, prepositions and auxiliaries.

The open class of words (X-class) consisting of nouns, verbs, etc., on the contrary could be characterized as follows:

i. this class is more extensive in number than the pivot class;
ii. the words belonging to this class do not occur as frequently as the pivot words do;

[1] See also Braine (1963b).

iii. the open words can occur in one-word sentences;
iv.   there are some observational indications for the assump-
      tion that the open class words have a free position in the
      child's sentence.

2.1.2 *Jenkins and Palermo* (1964)

In their paper "Mediation processes and the acquisition of linguistic
structure" (1964) Jenkins and Palermo develop a theory of language
acquisition based on stimulus-response and mediation theory,
which can be considered to be a weaker version of the theory of
Braine, as developed by him in "On learning the grammatical order
of words" (1963) in order to support the pivot-open distinction.[2]
The child's acquisition of syntax is regarded as consisting of two
basic learning procedures:

i.   the formation of classes by labeling of things by words;
ii. the fixation of word order. The simplest structures are
     label + operator and operator + label.

Furthermore, Jenkins and Palermo make some remarks on
procedure that are interesting for the discussion:

i.   some guesswork will be inevitable in the formation of
      classes by the examiner because some words occur less
      frequently than others;
ii.   it is possible that classes develop very slowly and that they
      need a great frequency of usage before they are firmly
      consolidated;
iii. there will be gradations in the relation between elements
      within a certain class, dependent on the number of
      contexts they share and on the degree of similarities
      between these contexts.

The authors envisage the possibility of embarrassment because of
the complications involved in this last consideration. Finally,

2   See Bever, Fodor and Weksel (1965) for discussion.

they add semantic notions like 'thingness' for nouns and 'activity' for verbs to the criteria used in procedures of classification.[3]

2.1.3 *Miller and Ervin* (1964); *Brown and Fraser* (1963)

The study of Miller and Ervin ("The development of grammar in child language") and that of Brown and Fraser ("The acquisition of syntax") are observational and longitudinal. They can be regarded as having given a good account of the technique and problems of writing grammars based upon the pivot-open distinction, although they use other terminologies, respectively operator-open and modifier-open. Both studies take word position in the sentence as a starting point for their analysis, but besides this context comparison was also taken into account in the sense that words belonged to the same class if they shared many contexts,[4] and to different classes if they had few or no contexts in common. That some guess-work is inevitable in the determination of classes based on this procedure will be evident. This topic has also been discussed by Jenkins and Palermo (1964). Some justification for this analytic procedure is given in particular by Brown and Fraser (1964). The most fundamental and interesting results for our present purpose are:

(a) Miller and Ervin
  (1) a few high frequency words (i.e. operators) tend to be restricted to a given position in the sentence and tend to define the meaning of the sentence as a whole.[5] Examples are *the, here, that*;
  (2) the differences between operators and non-operator classes is relative rather than absolute.
  (3) nouns and verbs appear to belong to the non-operator classes.

[3] See Brown and Fraser (1963) for discussion.
[4] This principle is called the principle of privileges of occurrence.
[5] See also Bloom (1970) for discussion.

(b) Brown and Fraser

   (1) *that* and *there* are very useful for the determination of
        classes; the words that can be combined with these words
        belong to the same class;

   (2) the initial words and the words in second position each
        form a class;[6]

   (3) the verb class can not be considered to exist already in the
        early stages under discussion.

2.1.4 *McNeill* (1966a)[7]

Surveying literature on children's first grammar, McNeill argues
that Braine's grammar, based as it is on position only, is too weak.
He postulates that not merely position but also privileges of occur-
rence ought to be taken into account. Furthermore, McNeill
claims that a generic relation between the child's grammar and that
of the adult has to exist. This means that the child's grammar may
'ignore' but has to 'admit' all the distinctions of the adult grammar.
Applied to the present topic it would mean that the pivot and
the open class each ought to consist of a number of separate adult
classes. This way McNeill is able to demonstrate the differentiation
of the pivot class within a period of 5 months. This differentiation
leads to the theory of the hierarchy of syntactic categories as
worked out by Chomsky (1961).[8] According to this theory there
is a system of levels in word categories. All levels consist of an
exhaustive classification but each successively lower level is a
refinement of the level just above. However, this theory had been
rejected by Chomsky in (1965).[9]

   About the status of the verb class McNeill is very unclear.
Most of the time one feels that the decision would be justified that
verbs belong to the pivot class, but that this will not be the case

[6] According to Brown and Bellugi (1964) adult articles, possessives, number
names, pronouns and adjectives can be considered as one undifferentiated
class because of their privileges of occurrence.
[7] See also McNeill (1966b and c).
[8] See also Chomsky (1964).
[9] See also 2.1.5 McNeill (1970a and b).

is clear from the proposed rules:

(1) S $\longrightarrow$ (P) + O

(6) S $\longrightarrow$ N + N

(7) S → (P) + NP

NP $\longrightarrow$ $\begin{Bmatrix} (P) + N \\ N + N \end{Bmatrix}$

(8) S $\longrightarrow$ Pred P

Pred P→ (V) + NP

NP $\longrightarrow$ $\begin{Bmatrix} (P) + N \\ N + N \end{Bmatrix}$

Rule (8) shows that (V) cannot be considered to be a pivot class anymore.[10] Another point is also evident from the rules viz. that only the class of open words to which the nouns belong can be used in isolated position.

A last relevant point to be mentioned here is concerned with rules (7) and (8) as opposed to (1) and (6). Rules (1) and (6) are simply sequential and lack any sort of hierarchical structure. In this respect they differ from rules (7) and (8) as phrase structure rules. From a linguistic point of view it is McNeill's most essential contribution to the theory of pivot grammars that he tried to describe pivots in terms of a hierarchical phrase structure grammar, because it is owing to this assumption that FUNCTIONS and relations, as defined by Chomsky (1965), can be taken into account within pivot grammars.

2.1.5 McNeill (1970a)

In contrast with his 1966 paper McNeill in 1970 assumes that grammatical relations already exist before the first appearance of two word sentences. The new phenomenon in the two word sentence is, therefore, only the appearance of patterned speech expressing grammatical relations. In this patterned speech the

[10] One cannot say that the verb class has been separated already from the pivot class, because rule (8) was already used very frequently at time 1. At that time the pivot class was not yet differentiated.

pivot-open distinction can be found again with the following characteristics:

(a) pivot and open can be separated on the basis of frequency and of number of members in the class;

(b) pivots can occur with open class words: they never appear in isolated position or with each other;

(c) pivots each have a fixed position as do the open class words when combined with pivots;

(d) the pivot class never contains nouns or noun phrases, except for *I* and *it*;

(e) the status of the verb is again doubtful.

According to McNeill the pivot-open distinction reflects a genuine division of children's vocabularies into two classes. The most compelling argument for this assumption is characteristic (b) as formulated above. In as far as the differentiation of the pivot class is concerned, McNeill maintains that this differentiation does not exist for single words (for example *this* or *that*) but for subclasses (like demonstratives, articles, etc.).[11] This appeared also to be the case for Zhenya the young son of the Russian linguist Gvozdev.

We also ought to deal with one of McNeill's most interesting points, viz. the hierarchy of syntactic categories. This hierarchy proposed by Chomsky in order to explore different degrees of grammaticality has been rejected by him because subcategorization is typically not strictly hierarchic, but involves rather cross classification.[12] McNeill takes this rejection to explain cross classification and semigrammaticalness in the earliest stages of development of the child. Furthermore, he compares Chomsky's switch from the hierarchy of categories to syntactic features[13] with the development of the child, who is abandoning the hierarchy of categories as an insufficient basis for learning adult language.

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[11] For example articles, demonstratives, adjectives, and possessive pronouns.
[12] See Chomsky (1965: 79). On this page, he also points to the fact that the hierarchy of categories deals with only a rather restricted part of grammatical structure.
[13] See Chomsky (1965), chapter 2.

Finally, McNeill goes into the status of the pivot class in a generative grammar as proposed in Chomsky (1965). He states that:

(1) pivot relations are modifications, predications or main verbs;[14]

(2) the two features [+ Det, + — N] designate exactly the pivot class of Adam and Zhenya.

(1) and (2) are contradictory because predications and main verbs cannot be described by means of [+ Det, + — N].

2.1.6 *Slobin* (1970)

Early speech consists, according to Slobin, mainly of content words and a few operators (= pivots) that occur frequently and perform basic functions. The operators have fixed positions (i.e. the positions of operators TEND to be fixed) and GENERALLY (BUT NOT ALWAYS) follow the adult order. There is a good deal of evidence that children place considerable reliance upon word order.

Slobin mostly maintains the distinction content word – operator. He presents a table in which strikingly similar German, Luo, Samoan, and Russian pivot-open combinations are collected.[15] Next to the content-operator combination, the semantic relation (content word – function word) also exists. As may appear from the title of this paper ("Universals of grammatical development in children") universality is claimed for the operator-content word distinction.

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[14]   From this statement one could conclude that verbs belong generically to the pivot class. However, according to McNeill's phrase structure rules (7) and (8) from 2.1.4 and a combination of both, this would be impossible.
[15]   One might wonder what the relevance of such a table is. An exhaustive list has not been given, but just a list of convergent examples. One would like to know what the operators were that could not be compared, because a universal theory of language acquisition has to explain precisely these uncomparable things.

2.1.7 *Bloom* (1970a)[16]

According to Bloom pivot grammars describe children's early speech only in the most superficial way. Although the notion describes certain distributional phenomena in children's earliest productions it is argued that children know more about grammar. On the other hand Bloom is not able to analyze her material without this notion 'pivot' in the description of child language. She defines pivot relations as functional relations with invariable grammatical meaning (i.e. the inherent function of the function words).[17]

She gives also a semantic description of some of the pivot words, like for example the pointing (= deictic) nature of *this, that, here,* etc. In contrast with other studies Bloom found that some frequently occurring words are both content words and words that can occur in a one-word sentence. As may appear from sections 2.1.4 and 2.1.5 (rules 7 and 8), in which the studies of D. McNeill have been discussed, it is a mistake to state that pivot grammars cannot represent hierarchy in grammar (Bloom 1970a: 37), as can also be deduced from her rules on p. 68: pivotal forms have been included in a hierarchical grammar. Actually, this grammar can be considered to be an elaboration and refinement of the grammar proposed by D. McNeill in 1966 (rules 1-8).

2.1.8 *Some final remarks*

As may be evident from the foregoing, there is only small agreement within the studies on pivot grammars. This agreement seems only to exist where frequency, distribution, position, number and the like are concerned. Almost every experimenter feels that such criteria are too weak to construct a sufficiently valid grammar from and ought to be amplified with notions like privilege of occurrence,

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[16] This study is the publication of Bloom's Ph.D. thesis (1968). Bloom (1971) can be considered to be a summary of Bloom (1970a).

[17] Notice that Bloom's definition of FUNCTION is quite different from the widely accepted one as for example elaborated in Chomsky (1965), chapter 2, in which functions are considered to be grammatical relations.

phrase structure grammars, the distinction between function words and content words, etc. That all these amplifications may possibly lead to different results is self-evident, and can actually be concluded from the facts: some studies consider their results as relative rather than absolute, other studies find different subclassifications. In the next section (2.2) these and other problems concerning pivot grammars will be discussed more extensively.

2.2   THE ORIGINAL CHARACTERISTICS OF THE PIVOT-OPEN DISTINCTION

2.2.0   *Introduction*

In this section I would like to deal with those characteristics of the pivot-open distinction that were already present in the earliest studies dealing with the pivot-open distinction, and that have never been abandoned since, even not by Bloom (1970) who presents fundamental critical notes on this topic.

The characteristics aimed at are:

i.   in comparison with the words in the open class, the words within the pivot class are very frequently used;

ii.   the pivot class has in comparison with the open class only a few members;

iii.   the words within the pivot class tend to have fixed position in the child's sentence.

Firstly, I would like to discuss these characteristics theoretically and later compare them with the findings of an investigation based on data from five Dutch children.

2.2.1   *Frequency as a linguistic feature*

Frequency as a linguistic measure has been taken into account since the early 1950's by linguists working within the discipline of information theory. Basically, this theory deals with performance data and for that reason with speech data; it found structural

features which are rather extrinsic to linguistic rules. One of its fundamental principles is that 'language' (= speech) is more efficient if the length of units is inversely related to their probability. That this was the case was first observed on the word-level by Zipf who found that the most frequently used words generally are shorter (see Zipf 1949 and 1965). It is not certain, however, that a similar law can be formulated for the syntactic level. At any rate, it can safely be stated that information theory has never been able to establish a causal relationship between probability (frequency) and syntax. Chomsky and Miller (1963) discussed the inadequacy of stochastic (probability) models of language users. They conclude that these models are too weak from a linguistic and psycholinguistic point of view and, furthermore, that they cannot be considered as valid theories about language, language structure, and language use.[18]

If we apply this knowledge to the study of child syntax we can safely say that a statistical approach to the study of patterned speech as used by children in the earliest stages of their linguistic development can provide a lot of information, but it is not quite clear whether it is the kind of information that one can actually put to use in designing and writing grammars.

On the other hand, however, it is understandable that people who regard child language as an exotic sort of language like to operate with such clear and verifiable criteria as frequency. For one can easily avoid in this way the application of adult knowledge of grammar to the description of child language. But, in that case it is possible that one will not be able to expose the children's knowledge of grammatical functions, relations and categories, as is argued extensively by Bloom (1970a and 1971). The problem is that on the one hand one is not able to decide on the basis of frequency whether the child has intuitive knowledge of for example the subject of a sentence, the possessive constructions, the copula, etc.; and that on the other hand one is unable to define a class in

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[18]   See also Chomsky (1957), chapter 2, "The independence of grammar" and also chapter 3 "An elementary linguistic theory" in which the statistical or probabilistic models are rejected as irrelevant for the purposes of syntax.

terms of frequency in such a way that the definition holds for all members of that class. In other words, the description by means of frequency is at best a superficial classification of the child's vocabulary (instead of syntactic categorization) of which the linguistic validity may be questioned. The situation is like that of the biologist who simply counts leaves and branches in order to get some classification of trees.

A more practical point of criticism is concerned with the fact that the data of actual performance are used for investigations. Namely one cannot be certain whether the frequencies derive from the child's language ability or from the contexts and situations in which the data are gathered; for instance an apparently open class will frequently be used when that word is the name of the only present toy, or the only toy he played with during the sampling. On the other hand, it is possible that in a particular dialogue in which the child is answering questions about pictures, words like *that* and *there* are more frequently used by the child than in totally spontaneous speech. The circumstances (see Bloom, 1970a) can influence the classification. The problem of what is called crossclassification is the more serious when one bears in mind the fact that most studies used only material from a small number of children gathered during just a few short sessions.[19] The last problem to be mentioned here deals with the connection of frequency with semantics. If such a connection really did exist, it would be a very indirect one because of the diversity of subclassifications within the pivot and open class. Whether content words can belong to the pivot class is a matter of considerable dispute among the mentioned authors. If this is the case, however, it is worthwhile to mention the number of sorts of subclassifications that are possible within the class of function words.[20]

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[19] Crossclassification will be discussed in 2.3.2.4. This term refers to the phenomenon that words belonging to the same class in adult language occur in different generic classes of one child or that some words belonging to the pivot class of child X belong to the open class of child Y.

[20] Considering the principles of information theory which states that probability (frequency) is inversely related with information content it is difficult to

Resuming briefly, methodologically and theoretically it can safely be stated that the observed correspondence between the frequency of words and word classes ought to be considered coincidental for the moment, and that we are forced to conclude that frequency gives no particular insight into some of the basic problems of child syntax.

2.2.2. *The number of members within the pivot and open class*

Of the statement that the number of members in a class is an intrinsic feature of that class it is not quite clear whether it gives information about the linguistic status of the class in as far as grammar and semantics are concerned. The statement that the pivot class, in contrast with the open class, has just a few members is only relevant if the pivot and the open class are somehow related to such semantic notions as the class of function words and that of content words respectively. However, this relationship is still under discussion. Furthermore, the function-content word distinction is not a very fruitful one in the light of syntax. For instance the grammatical functions of the function words are quite different and have a very distinct linguistic status (for example *who, where* against *a, the,* or against *to, into*). Before one can go further with investigations concerning this problem, some questions should be answered:

  i.   what is the frequency level that can be regarded as the boundary between pivot words and open words?
  ii. is it possible to determine exactly such a level? (The number of members in each class depends on the position where the boundary between the open and pivot class is situated.)

In my opinion, no appropriate answers are given to these questions in the literature. This is apparently one of the reasons that later studies added other criteria like privileges of occurrence and hierarchical structure in order to be able to continue with research.

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state that the pivots would tend to define the meaning of the sentence, as stated by Miller and Ervin (1964) and Bloom (1970a).

2.2.3. *Position as the discriminative factor for the pivot-open distinction*

Before dealing with word position in the language acquisition process let us summarize briefly how word order is treated in linguistic theory. Like the concentration upon frequency, distribution and classification that upon word order or position of the word in the sentence takes place belongs to the heuristic procedures of Bloomfieldian structuralism. Bloomfieldian linguistics is closely related to the methodological and theoretical principles of behaviourism;[21] these principles cannot be brought into agreement with Chomsky's linguistic theory as developed in Chomsky (1957) and (1965).[22] For that reason it is hard to understand why Chomsky's theory has been chosen as the linguistic basis in almost every study that deals with the pivot-open distinction, all of which take fixed positions as one of the pivot's characteristics. This situation is the more astonishing, when we take into account chapter 3 of *Syntactic Structures* in which Chomsky convincingly argues that a language model based simply on sequence (for instance the finite state Markov model of language) cannot be accepted for the purposes of grammar.[23]

In Chomsky (1965) ordering is also dealt with. This topic is here restricted to the ordering of elements in deep structure.[24] Within deep structure the same lexical elements can occur more than once. Consider therefore the following sentences and their syntactic description in which lexical items of the N-class are inserted surely in more than one sentence position. We have also to take into account that Chomsky is dealing with syntactic categories like NP, VP, etc. of which lexical categories are just a special subpart.

(1) A man hurts a woman
(2) A woman hurts a man

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[21] For example sequential learning, the principle of strict observability, etc.
[22] See Chomsky's (1959) review of Skinner's *Verbal behavior*.
[23] See also Chomsky and Miller's "Finitary models of language users" (1963).
[24] P. 123-27 The ordering of elements in deep structure has been subject to considerable dispute during the last few years. See also Staal (1968).
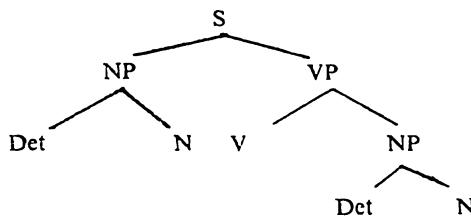
V → *hurt*, etc.

N → *woman*, *man*, etc.

Beside this, there are transformational rules that can reorder elements in the surface structure.

After this short discussion on word order and sentence position, I would like to return to language acquisition research. I will restrict myself to the studies of Braine[26] because he most emphasized in the literature the principle of word position.

According to Braine (1963a and b) word position is learned on the basis of contextual generalization. That is to say, learning word position amounts to generalizing information from the primary linguistic data about the position in which a word is observed to occur. However there are two questions:

(a)   is it possible to state that words have fixed positions within an adult sentence? and

(b)   is it necessary to reduce Braine's statement to McNeill's more careful reformulation that the child is capable of observing whether a word is used in the first half or in the second half of the sentence?[27]

I hope that the following critical remarks will make clear that there is probably no learning principle that can generalize information about the position of a word within a sentence.

[25]   Only the relevant aspects are given.
[26]   See for discussion also Bever, Fodor and Weksel (1965) in which many points of criticism given in this section have already been mentioned.
[27]   McNeill (1970a); he takes also contextual generalization to be the explanation of fixed position in the child's speech.

i.   If it exists, learning theory based upon fixed position cannot be claimed to be universal because there are languages which have more or less free word order. Some observations may illustrate this point. For Russian, for example, Slobin (1966) reports an SOV dominance in the speech of the Russian child Zhenya. This dominance is in contrast with the SVO dominance in adult speech. A learning theory based upon contextual generalization of fixed position cannot explain this observation; for neither in the speech of the child and that of the adult can totally fixed position be found: there is just a dominance. If the child took word order as a language learning device it cannot be explained why the child does not rely upon the SVO dominance of the adult speech. Furthermore, although Dutch does not have free word order, I found for the Dutch girl Hester that she used initially almost all permutations of SVO without a change in relational meaning. All these data suggest that word order is less essential for the language learning child than generally is assumed in literature on this subject.

ii.   The following sets of sentences make clear that words cannot be characterized in terms of position in the sentence:

(4)   i.   John would be *there*
      ii. *There* is John
(5)   i.   What is *that*?
      ii. *That* is a chair
(6)   i.   John saw a *chair*
      ii. The *chair* looked OLD
      iii. The OLD *chair*...

It can safely be stated that in English also there are a lot of words which do not have a position in the sentence that is sufficiently fixed in order to serve as the basis for learning language.

iii.   As reordering transformational rules make clear (see above) neither do grammatical functions always have fixed positions in the surface structure of the sentence.

This last point makes Braine believe that simple declarative sentences are primary phrases which would mean that all sentences are

derived from the primary simple declarative sentence (the kernel sentence). Beside the fact that this appeared to be a general misconception in psycholinguistics in the early 1960's,[28] it implies also a neglect of the primary linguistic data, with which the child is confronted. There is no reason for the assumption that in adult to child and in child to adult speech[29] interrogatives and imperatives would not occur. It can be found, on the contrary, that in the youngest communicative behaviour of the child the desiderative aspect of language use takes an essential place. There is also no support for the assumption that a statistical imbalance in favour of the simple declarative sentence would exist to explain an eventual central place for the declarative in the language of the child. As a last point to be mentioned here, I would like to go into the problem of the child's segmentation ability, by which is meant that in order to judge position, children are presupposed to have the ability to fix word boundaries in the speech they hear. Bever et al. (1965) argue that it is not possible that segmentation takes place on the basis of such criteria as stress, pitch, intonation, and juncture. They base this assumption mainly on experimental evidence presented by Lieberman.[30]

I think, however, that their objections are somewhat unrealistic on this point. Lieberman, in fact tries in his experiments to demonstrate the determining role of grammatical structure over and against phonetic data, such as juncture phenomena. Actually, however, Lieberman's experiments demonstrate, as has been argued convincingly by Kooij (1971) that contextual features may override phonetic features, or in other words that probability on the basis of context and situation is the determining factor in disambiguation. Furthermore, in these experiments it has not been demonstrated that phonetic features cannot play a determining role in cases in which the presented utterances are not homon-

[28]   See also Section 1.1, i, vi.
[29]   Bever, Fodor and Weksel take also radio, television and adult-to-adult speech into account when discussing the primary linguistic data. I take this, however, in accordance with Brown and Bellugi (1964) to be highly irrelevant in the language acquisition process.
[30]   See Liebermann (1965 and 1967) and Kooij (1971) for discussion.

ymous.

For that reason the alternative explanation that knowledge of base structure rules would have a central function in language acquisition in as far as word segmentation is concerned has also not been argued convincingly. Lieberman's conclusions, finally, are contradictory to Bever, Fodor and Weksel's. He assumes that the language learning child is in the same position as the linguists in his experiment who transcribed simulated speech. In this task the linguist's transcriptions appeared to agree more with the physical contours than it did in the task with actual speech. This means that according to Lieberman a child beginning to learn his language has to rely mainly on intonation, a conclusion that is in accordance with literature on this topic,[31] and with some findings that will be reported later.

2.2.4 *Conclusion*

There are three characteristics that play a determining part in the fixation of the pivot-open distinction (frequency, position and the number of members within the class). The first two characteristics are more essential, because the third one can only be found after the fixation of classes.

Theoretical and methodological arguments were given to support the assumption that each characteristic separately is insufficient to establish something as linguistic relevant classes; the characteristics cannot be applied absolutely to determine the class of each word; furthermore, there is serious objection in linguistic theory against the present characteristics. There is no reason to expect that the combination of the present characteristics are more successful with respect to the detection of linguistic classes: the methodological insecurity of the characteristics cannot be ruled out by combination; it is self-evident furthermore, that the combination will also be condemned by linguistic theory.

In the next section a demonstration will be given of the methodological shortcomings dealt with so far.

[31]   See for example Weir (1966), Menyuk (1969), and Murai (1960).

2.3 OBSERVATIONAL EVIDENCE AGAINST THE PIVOT-OPEN DISTINCTION

2.3.0 *Introduction*

As has been demonstrated in the foregoing section, there are theoretical and methodological objections against the original characteristics of the pivot-open distinction, which one could not easily overcome. In this section, I intend to discuss some observational data of Dutch children that can be considered as negative evidence for the distinction we are dealing with. I will restrict myself to the following topics:

i.   Is it possible to separate words of the pivot class from those of the open class on the basis of frequency in the data;

ii. Do the adult function words in contrast with content words tend to belong to the pivot class in child language, or in other words are they frequently occurring;

iii. Do the function words of frequent occurrence (= pivot-words) have a fixed position in the child's sentence;

iv. Is it true that the frequently used words cannot be found in the one-word sentence;

v.   Do all children have the same sort of words in their respective classes? As will be clear ii. and v. are concerned with the problem of cross-classification.

2.3.1 *Procedure*

During four months from the beginning of the two word sentence stage the utterances (types not tokens) of five Dutch children (2 boys and 3 girls) have been collected. Of one child, named Hester, we collected all utterances exhaustively from the stage of the first one word sentence till six months later when she used three word sentences. The utterances were collected partly by parental diaries and partly by tape recording; viz. 3 times for two hours each; at the beginning, after two months and at the end of the period. The other

four children who are called Anna, Maria, Joseph and Floris have been tape recorded at the same intervals (2 months) and also for two hours on each occasion. For all the children all different words occurring in the sample have been counted. Of the most frequently used words the positions that the words could take in the sentence are reported and also whether they could occur as one word sentences. In addition the adult categorizations content-word – function-word has been taken into account.

It would be misleading, and even impossible (see 2.3.0 number v.) to take together the data of the five children, because the children do not know the same words, and if they actually did incidentally, it would be possible that they do not use these words with the same frequency. Instead of this, the data were examined separately and the results were compared afterwards. In the following I will continue with the presentation of the results from Hester's data (about 400 sentences). The results of the other children will only briefly be mentioned. Only the deviant results will be dealt with in more detail.

2.3.2 *Results obtained*

2.3.2.1 *Frequency*
In the histogram of Figure 1 the number of words and their frequency in the material are compared.

It will be evident, that the pivotal words can be supposed to be presented somewhere at the right. What appears from Figure 1, however, is that it would be rather difficult to determine the exact boundary between the class of frequently used words on the one hand and the class of words that occurred rarely on the other hand, on other than arbitrary grounds. The same things are found in the data of the other four children with just the one difference that context and situation (influencing the data in sampling rather than in exhaustive material such as that from Hester) apparently caused the histogram to be even flatter than that of Figure 1.

These results can be considered a strong basis for rejection of the pivot-open distinction because all other features of this distinction
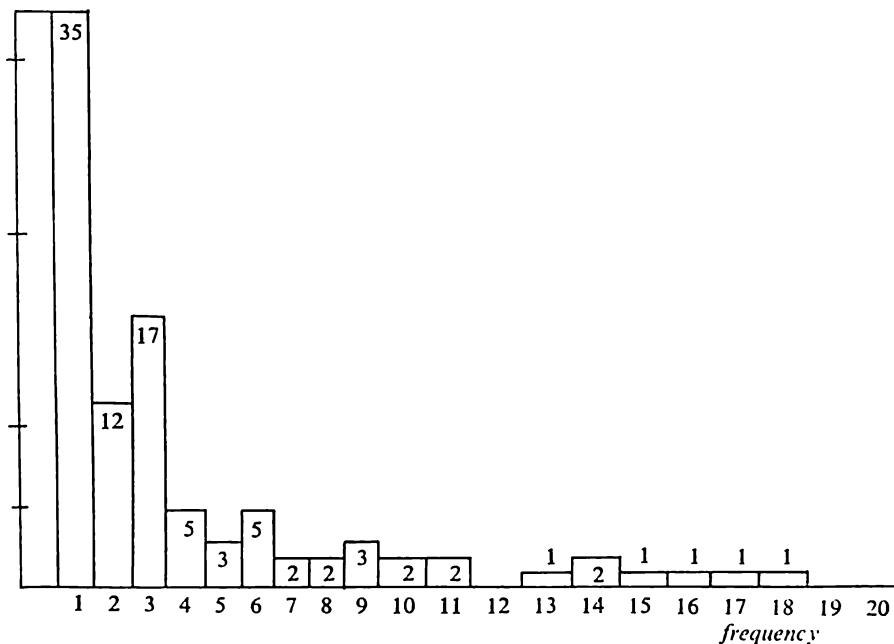
Figure 1. Histogram of number of words compared with their frequency of occurrence in Hester's speech.

depend on the presence or absence of a clear boundary based on frequency.

2.3.2.2 *The most frequently used words*

As demonstrated above it is merely guesswork to determine the exact boundaries between the pivot and the open words. Let us reformulate therefore the relationship between frequency and the pivot-open class distinction in such a way that exact boundaries do not need to be indicated, but instead that pivot words tend to occur frequently and open words do not. It is needless to say that this reformulation implies a considerable weakening of the relationship.

In Figure 2 I collected all words and their translations that occurred ten times or more in the data of Hester.

In this figure one can see that the frequently used words belong to different adult categories. Figure 3 demonstrates this more explicitly. As Figure 3 shows, nouns, verbs, and pronouns tend to appear most frequently. The first category and most of the time also the second one have been found in literature as subclasses of

	words	frequency	translation	adult category
1	pakken	30	take	verb
2	Hester	27	Hester	noun (proper)
3	daar	24	there	adverb
4	ditte	18	this	pronoun
5	koeke	17	cake	noun
6	maken	16	make	verb
7	eten	15	eat	verb
8	deze	14	this	pronoun
9	open	14	open	adjective
10	mama	13	mommy	noun
11	ook	11	also	adverb
12	in	11	in	preposition
13	is	10	is	copula
14	zitten	10	sit	verb

Figure 2

category	frequency				percents	
	of words		of occurrence			
content-words						
verbs	4		71			
nouns	3	8	57	142	61.2	
adjectives	1		14			
function-words						
pronouns	3		56			
adverbs	1	6	11	88	38.8	
copula	1		10			
prepositions	1		11			
	14	14	230	230	100	total

Figure 3.   Frequency compared with categories of Hester's material.

the pivot class. This means that seven words which on the basis of frequency (128 times, i.e. more than 50 %) strictly speaking should belong to the pivot class, are not in accordance with the subclassifications of that pivot class.

One can also deduce from Figure 3 that a relationship between function words and high-frequency words does not exist at all in the material, except in the case of the class of pronouns.

What do the results mean for the present problem? First of all we must bear in mind that strictly speaking we are discussing the characteristics of the pivot class only, because of our limitation to words that occurred ten times or more in the material. Of this pivot class, however, we can say now, that it is a very heterogeneous one, which does not consist just of function words but also (for more than 50 % of the occurrences) of content-words. One could perhaps maintain that there is a tendency for function-words to have a rather high frequency of occurrence. But this can apparently also be said of the content-words.

Furthermore, there is in the material also a great number of function words that only occurred once or twice; for example the prepositions *voor* 'for', *aan* 'to', *uit* 'out', and the adverb *hier* 'here' in contrast with *daar* 'there', etc... It seems to me that such a severe cross-classification as that discussed above would have led to learning problems for Hester, at least if it were assumed that children learn their language on the basis of the relationship between frequency and syntactic classes. However, to reassure the readers, Hester is five years old now, "talking her parents out of house and home".

The material of the other children had the same characteristics. Their most frequently used words are:

Maria: *dat* 'that', *een* 'one', *doen* 'do' (substantive verb), *niet* 'not', *ook* 'also', *poes* 'cat', *in* 'in', *is* 'is' and *klein* 'little'.

Anna: *Carla, ikke* 'I', *mama* 'mommy', *kom* 'come', *ook* 'also', *Tasja, zitten* 'sit'.

Joseph: *Mama* 'mommy', *Rita, ditte* 'this', *daar* 'there', *eten* 'eat', *ik* 'I', *is* 'is', *in* 'in', *open* 'open', *pakken* 'take',

    kapot 'broken'.

Floris: *hebben* 'have' (substantive verb), *op* 'on', *pakken* 'take', *kijken* 'look', *mama* 'mommy', *poes* 'cat', *weg* 'away', *appel* 'apple', *boek* 'book', *daar* 'there'.

The material from Maria is the only material that contrasts even slightly with the rest, but even in this case cross-classification is present: *doen* 'do', *poes* 'cat', and *klein* 'little'.

2.3.2.3 *Position and frequency in one and more word utterances*
Another characteristic of the frequently used words is, according to the literature, that they tend to have fixed positions in the sentence. If this is really the case a number of subclasses could be deduced:

(a) pivot words occuring as the first word of utterances (p_1);
(b) pivot words occurring in the second position of an utterance (p_2);
(c) pivot words occurring in the third position of an utterance (p_3),

etc. Furthermore, it has always been assumed that pivot words could not be observed in the one word sentence. Figure 4 shows the

word	p_1	p_2	p_3	one word sentence
ditte	×	×	×	×
daar	×	×	×	×
deze	×	×	×	×
eten	×	×	×	×
Hester	×	×	—	×
is	×	×	—	—
in	—	×	×	×
koeke	×	×	×	×
mama	×	×	×	×
maken	×	×	×	—
open	×	×	—	×
ook	×	×	—	—
pakken	×	×	×	×
zitten	×	×	×	×

Figure 4. Positions of the most frequently used words in Hester's material.

positions that the frequently used words of Hester's material, as mentioned in the foregoing sections, could take, and also whether the assumption about one word sentences is correct.

Figure 4 speaks for itself:

(a)   almost all frequently used words can occupy any position in the sentence;
(b)   almost all words under consideration could occur as one word sentences;
(c)   the few blanks that indicate that a word did not occur in the indicated position, cannot be (conclusively) explained by the function-word—content-word distinction, but probably by the fact that the sample was not extensive enough (to include sufficient examples of three word sentences).

The same conclusions can be drawn from the other children's data. There is only one additional thing worthy of note: the copular form *is* inasfar as it belongs to the frequently used words (namely in the case of Maria, Joseph and Hester) had a blank in the third position, or in the one word sentence, or in both.

The consequences of the results are extremely strong. It can be deduced not only that the original characteristics of the pivot-open distinction (frequency, position and number of members in a class) have been definitely falsified, but also that the eventual presence in the child's linguistic competence of the linguistic subdivision into function words and content words cannot be demonstrated with such criteria as frequency and position.

2.3.2.4 *Cross-classification*

The problem that cross-classification can take place accompanied the pivot-open distinction in literature from its start. The term has two meanings in language acquisition, both of which are different from Chomsky's definition.[32] The first meaning is that the words of the same adult category do not necessarily all belong to the

[32]   See Chomsky (1965).

same class in child language. The other meaning is, that all children do not necessarily form the same categories.

In 2.3.2.2 the problems concerning the first meaning of cross-classification was dealt with. It was found that cross-classification is something of an euphemism for the results presented there. In this section, I would like to deal with problems concerning the other notion, viz. the cross-classification that can be found between the samples of the five subjects. I will discuss the five different classes of most frequently used words, after comparison of these classes inasfar as they include the same members. For that reason all words have been brought together in Figure 5.

		Hester	Maria	Anna	Joseph	Floris	total
1	*ditte*	[datte]	—		×	—	2 [3]
2	*daar*	—		—	×	×	3
3	*eten*	—		—	×	—	2
4	*is*	×		—	×	—	3
5	*in*	×		—	×	—	3
6	*mama*	—	×	×	×	×	4
7	*open*	—		—	×	—	2
8	*ook*	×	×	—	—	—	3
9	*pakken*	—		—	×	×	3
10	*zitten*	—		×	—	—	2
11	—	poes		—	—	×	2
12	—	—		ikke	×	—	2

Figure 5.   The frequently used words of the five children compared.[33]

The table as given in Figure 5 is the more illustrative if one bears in mind that fifteen of the frequently used words qualify as frequently used words for only one of the five children.

There are only three words of the present classes of words that were uttered by just one child (and, that therefore, were not presented in the list), viz. *een* 'one', *klein* 'little' and *kom* 'come' (vf.). It should, however, be noticed that we can only be sure about

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[33]   The proper nouns are left out and also those words that were frequently used words for only one child.

Hester, because of the exhaustive material. For the other children it is possible that these words are known but that they just did not occur in the samples. From Figure 5 it is clear that the subjects did not have the same words in the class of most frequently used words. There is only a small number of words that show a tendency in that direction: *daar*, *is*, *ook*, *in*, *pakken*, and *mamma*; that is to say: these are words that occur frequently in the material of at least three of the five children. Four of these words are function words. However, the only word frequently occurring in the material of at least four children was a noun: *mama*. Furthermore, almost all words of Figure 5 were known by the five children. More than a half of the words (16:27), however, occur only frequently in the material of one of the five subjects and there is no word frequently used by all five children.

In my opinion the conclusion is obvious: on the basis of frequency it is not possible to find classes that have enough power to be generalized from one child to more children. In other words, classifications on the basis of frequency of occurrence ought to be regarded as idiosyncrasies because of extreme cross-classification.

2.3.3 *Summary*

The original characteristics as introduced by Braine (1963): frequency, position, and number of members in a class have been proven to be not a good starting point for linguistic and psycholinguistic research in the field of language acquisition. This is evident not only from a theoretical and methodological point of view (2.3.1) but also from observations on the data of five Dutch children. It appeared that the above mentioned characteristics could not lead to any relevant psycholinguistic distinction, not even to a very superficial one such as function-words – content-words.

2.4   SOME LATER CHARACTERISTICS

2.4.0 *Introduction*

In the next few sections some later additions to the pivot-open

distinction will be dealt with. I did not try to pursue completeness but only to deal with those topics that have more or less the central attention in literature:

(1) absolute vs. relative;
(2) privileges of occurrence;
(3) hierarchical structures.

2.4.1 *Absoute vs. relative*

One can find in literature such remarks as Miller and Ervin's to the effect that the difference between operators and non-operators is relative rather than absolute. Such a remark can only be explained as: taking the (adult) distinction content-word–function-word as a starting point for the analysis one can find tendencies like: there is just a small number of function-words, function-words tend to appear very frequently, the content-words tend to have a more or less free position in the child utterance, etc. Formulated this way, the distinction pivot-open has only a relative relationship to characteristics like: frequency; this, in turn means that frequency and other theoretical characteristics cannot be taken as an argument to determine whether or not a word belongs to the pivot class. In that case, the pivot-open distinction becomes a linguistic distinction on the basis of adult categorization and intuition, instead of a frequential and/or distributional notion. The psycholinguistic relevance in language acquisition of each member of a class can only be 'relatively' illustrated by distribution and frequency. Furthermore, the analysis remains as superficial as before: no relations, no functions, no operations can be demonstrated; only a superficial and weak classification can be found.

The explanation of how children acquire language according to this reformulation of the theory remains also unanswered. The leading questions are:

(1) How can children arrive at the tendencies under discussion in their language use?
(2) Are these tendencies also present in the input data in such a

way that these tendencies can be deduced by the child from these data?[34]

(3)   Or is the child following an own procedure of which the tendencies under discussion are mere coincidental by-products?

As a final remark: I think it is almost needless to emphasize again that this theory is also not in accordance with the results mentioned in the foregoing sections. The observations presented there make that even a 'tendency' as discussed above should be doubted.

2.4.2 *Privileges of occurrence*

By privileges of occurrence is meant not ony the position a word can take in a sentence but also the range of possible combinations with other words or word groups, that words appear to have. From a linguistic point of view it is a valid heuristic procedure. It can be compared with the linguist who is looking for common contexts as in:[35]

(7)   This is the sofa John sleeps on
(8)   *This is the morning John sleeps on
(9)   On the boat he decided
(10) *On the dearer quality he decided

The difference, however, between a linguist dealing with adult language and the linguist working in the field of language acquisition is that the first mentioned linguist will make and find more or less intuitively the right sentences, in order to verify his linguistic hypothesis. The latter, on the contrary, has to restrict himself to the data presented to him by the child. This difference may cause the gaps in the framework of the latter discipline. In that framework it can only be guessed whether these gaps are systematic belonging to the child's linguistic competence or are instead merely accidental. See for example Brown and Fraser (1964) who deal with such

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[34] In that case, contextual generalization ought to be assumed to be a necessary learning principle.
[35] These examples have been taken from Seuren (1969).

problems. They were forced to put in the same class each word that shared at least one context with *that* or *there*. That such a procedure as Brown and Fraser's actually leads into serious problems may appear from Hester's sentence:

(11)   *Datte daar* 'that (ought to be) there'

Such a sentence makes clear that according to the just-mentioned principle both the pivot words *that* and *there* themselves would belong to the indicated class. It will be evident that by restricting the application of the privileges of occurrence merely to classification,[36] and the combinatory possibilities of classes one will not overcome such problems like those discussed. Other features like functions, relations, intonation and stress ought to be taken into account, at least, if one desires to give a complete account of children's knowledge of grammar.

2.4.3 *Hierarchical structures*

McNeill (1966a, b; 1970a) and Bloom (1970a; 1971) deal extensively with problems concerning the sequential nature of the pivot-open distinction as elaborated in the foregoing sections. Both authors reject such an assumption about pivot grammars as superficial.[37] Instead of a sequential approximation they propose a hierarchical system of rules – as elaborated in Chomsky (1957; 1965) – in which only the pivot is included, not the open category. In this section 1 will restrict myself to the rules proposed by McNeill because they are the ones earliest developed and because Bloom's rules are not essentially in disagreement with McNeill's. Furthermore, Bloom's rules are much more complicated to deal with because they consist of three sets of rules each deduced from the material of one child; this would lead into problems that are not relevant for the present discussion.

[36]   Brown-Fraser: Modifier-head   (= pivot-open)
       Miller-Ervin: Operator-non operator   (= pivot-open)
[37]   McNeill only in (1966b) but not in 1970a.

2.4.3.1 *Hierarchical cross-categorization*

McNeill (1966a) proposes the following rules describing the child's earliest grammatical knowledge

$$
\begin{array}{lll}
\text{(I)} & S & \rightarrow (P) + N \\
\text{(VI)} & S & \rightarrow N + N \\
\text{(VII) i.} & S & \rightarrow (P) + NP \\
\text{ii.} & NP & \rightarrow \begin{cases} (P) + N \\ N + N \end{cases} \\
\text{(VIII) i.} & S & \rightarrow PredP \\
\text{ii.} & PredP & \rightarrow (V) + NP \\
\text{iii.} & NP & \rightarrow \begin{cases} (P) + N \\ N + N \end{cases}
\end{array}
$$

Furthermore, McNeill argues that 15 % of the two word sentences and 10 % of the three word sentences could not be described if a simultaneous application of (VII) and (VIII) were not permitted. Apparently for this reason in McNeill (1970a) the following rule has been added:

$$
\text{(IX)} \qquad S \rightarrow \begin{cases} NP + (VP) \\ (NP) + VP \end{cases}^{38}
$$

The rules (VII) i. and (VIII) i. are left out in McNeill (1970a). In the latter formulation of the rules the pivot class has the following functions and relations:

    i.   P is subject [NP, S] in rule (I): *that (is a) car.*

    ii. P is determiner [det, NP] in rules (VII) ii. and (VIII) ii.: *a car.*

This can also be presented in a tree-diagram:

---
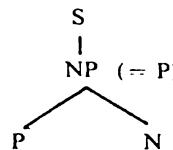
38   McNeill's rule actually was S → (NP) + (VP). This is an incorrect notation, because it implies the rule S → Ø; this would lead in more than one sense to nothing.

Such a formula, however, as given in iii. is not in accordance with Chomsky's model of language description, because in the general phrase structure rule $XAY \rightarrow XZY$, it is not permitted that A and Z are identical nor that A is a part of Z.

The facts that McNeill wants to describe also occur in adult language: viz. the substantive and adjective use of the pronouns like in

(12)   That (is a) coat[39]
(13)   That coat (is nice)

Pivots are not used in adult language description to account for this phenomenon. If they were used, a correct formulation of the rules is:

$$S \rightarrow NP + ...$$
$$NP \rightarrow \left\{ \begin{array}{c} P \\ P + N \end{array} \right\}$$

The irregularity in the formulation of the rules (I)-(VIII) as discussed above can be considered to belong to the problem of cross-classification. In this case we are dealing with cross-classification at the higher level of major categories. Therefore, I think the term cross-categorization will be more distinctive for the present phenomenon.

A more severe case of cross-categorization follows from VII and VIII, in which:

i.   N apparently is a modifier ([N, NP])
ii. N apparently also is a head ([N, NP])

This would mean that the functions of modifier and head are defined in one and the same way:

([N, NP]).

2.4.3.2 Surface structure vs. deep structure

Inasfar as words like *that, there,* personal pronouns, and the like

[39] Omission of the elements between parentheses delivers the equivalent child sentence.

are concerned the pivot words belong to surface structure categories, at least in the description of adult language. *There* is a surface structure phenomenon which means that the word is transformationally derived from deep-structure categories.[40] The essential problem that ought to be solved is why the same word for example *there* with roughly the same meanings as in adult language has been described differently from the standard theory. In this case, it means that McNeill must give reasons why he analysed *there* as a pivot against the standard theory, which would treat it for instance as an adverb phrase.

There are, in my opinion, two explanations which are consistent with McNeill's standpoint:

(i) It is not possible on the basis of frequency, position, privileges of occurrence, and the like, to differentiate the pivot class into subclasses like pronouns and adverbs.

(ii) It is a quite common assumption in language acquisition research that in the first stage of language acquisition, children would only use deep structures, i.e. do not have transformations at their disposition.

Against (i), so many arguments have been presented in the foregoing, that it can be assumed that this point of view is too narrow for an adequate linguistic account. About (ii) we must say more. However, I like to postpone this to section 3 in which the merits of the transformational theory in the field of language acquisition will be discussed extensively. For the moment it is sufficient to state that there is little or no justification for the assumption as mentioned in (ii). It rests mainly on performance data and does not go enough into questions like: What knowledge of language children can be presupposed to have that is not necessarily expressed in the child's utterance? Assumption (ii) ignores, therefore, the conception of deep structure, as developed by Katz and Postal (1964) and

[40] It is worthwhile to notice that the counterpart of *there*, the adverb *here* is mentioned as a pivot word by Ervin. But notice that Ervin's classification, in contrast with McNeill's, was based on the principle: function — content-word. In addition, in the material of Hester, and the other four Dutch children *here* rarely occurred, which would mean that *here* is an open word.

Chomsky (1965), that the deep structure of a sentence fully determines all cognitive or semantic aspects of that sentence.

Summarizing briefly, one can say that by taking pivots in a deep structure description of language one does not appreciate enough the differences between comprehension and production, competence and performance, and between deep structure and surface structure. Methodologically it is necessary to fix clearly where the boundaries between the first and second members of the distinctions above are.

2.4.4 *Conclusion*

It follows from the discussion on these later added characteristics of the pivot-open distinction which are most central in literature, viz. relativeness vs. absoluteness, privileges of occurrence, and hierarchical structures, that they do not add new arguments for the justification of the pivot-open distinction.

The first characteristic can be considered to be a weakening of the earlier formulation of the pivot-open distinction. The second one, though a valuable heuristic procedure does not change the essential characteristic of the pivot-open distinction, viz. that it merely introduces a superficial linguistic classification instead of the more important functions and relations like subject of the sentence, and object of the verb phrase. The last one leads to the incorrect method of putting together more superficial and more basic language phenomena instead of distinguishing them clearly. This, in turn, leads to serious confusions in as far as such highly relevant notions as deep and surface structure, and competence and performance are concerned. For that reason, the notion pivot can be considered a superfluous and confusing factor in the theory of language acquisition.

2.5   EVALUATION

Instead of the mere enumerations, given in section 1, of those criteria that are in correspondence with the theory of pivot gram-

mars and those that are not, I prefer to present a table of the criteria and their correspondence to several applications of pivot grammars.

Criteria	Braine	Privileges of occurrence	Content-function	Hierarchical structure
I. i. generative	×	×	×	×
ii. explicitness	×	×	×	×
a. class	×	×	×	×
b. function	—	—	—	—
c. semantics	—	—	—	—
iii. creative aspect	—	—	—	—
iv. formal universals	—	—	—	—
substantive universals	×/?	×/?	×	×
v. word order	×	×	×	×
vi. operations	—	—	—	—
vii. transformations	—	—	—	— [41]
transformations-semantics	—	—	—	—
II. i. one ling. theory	×	×	×	—
ii. prognostic	—	—	—	—
iii. discourse	—	—	—	—
iv. non verbal behaviour	—	—	×	—
v. perception	—	—	—	—
concept form.	×	×	×	×
memory	—	—	—	—
vi. generic explan.	—	—	—	—
vii. prim. ling. data	—	—	—	—

Figure 6. Evaluation criteria compared with the discussed language acquisition theories.[42]

From Figure 6 it is clear that the pivot-open distinction, whatever characterization may be used, does not generally meet the conditions for valid proposals for the description of language acquisition. Although it must be admitted that not all shortcomings in the

[41] McNeill reports the negative transformation. However, inasfar as the earliest grammars are concerned transformations are not assumed to be present.
[42] The numbers in the table refer to the criteria given in chapter 1.

four respective characterizations are intrinsic and inevitable,[43] there are enough inherent deficiencies for us to reject theories about language acquisition in which pivot and open play an essential role. Consider for example the theory based on hierarchical principles which is apparently the strongest one. It cannot deal with deep structure in connection with semantics because the boundaries between deep structure and surface structure have not been formulated clearly enough. Were this done, however, it would also mean that pivot words do not occur at all in a deep structure description of language acquisition and this would be the end of pivot grammar.

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[43] For example the procedure based on privileges of occurrence can take operations into account and hierarchical structure can deal with such criteria as transformations and operations.

THE TRANSFORMATIONAL APPROACH

3.0 INTRODUCTION

In this chapter I would like to deal with 'pure' transformational analysis of child language. By 'pure' is meant that for example in the case of McNeill (1966) the pivot-open distinction, as not belonging to transformational theory, will not be taken into account. There is much literature on this topic of which I only want to mention here the most relevant authors: Brown and his colleagues,[1] McNeill (1970a), Bloom (1970a), Smith (1970), and Menyuk (1969).

Instead of giving a full account of all studies, I decided to discuss more extensively only those studies which intend to give more or less a complete account of the linguistic problems involved in language acquisition: McNeill (1966-1970), Bloom (1970) and Menyuk (1969). It is not possible to deal with all aspects. Therefore I restrict myself to those that are not in accordance with the criteria of Chapter I. Consequence of this may be that the reader gets the impression that transformational analysis of child language ought to be rejected. This is not necessarily the case, however, as will be discussed in the final chapter.

3.1 McNEILL (1966-1970)

It is very difficult to come to grips with McNeill (1970a) because of the fact that he discusses almost every topic and theory in the field of language acquisition, while it is not always clear whether

[1] Especially Brown, Cazden and Bellugi (1969) and Brown and Hanlon (1970).

he agrees with them or not. However, mostly he brings them together in one gross and unclearly formulated framework, as has been demonstrated with the pivot-open distinction and hierarchical structure in the foregoing chapter (2.4), without discussing their contradictory standpoints. He is also often unclear at the descriptive level, as for example can be demonstrated with the descriptions of the verb:

(1)   (1970a: 61): The two features [+ Det, + — N] exactly designate the pivot class of Adam and Zhenya. This description does not include the verb.

(2)   (1970a: 65): For some reason p-words express only the grammatical relations of modification, predication, and MAIN VERB.

(3)   In the early grammatical rules, the pivot word has only been treated to have given a determining function (=1).

Such contradictory statements make it difficult to get a clear picture of McNeill's ideas of the language acquisition process. I can only hope therefore, that I understand the following topics of McNeill's theory correctly enough in order to be able to discuss them properly:

    i.   the transition from the one word utterance stage to that of the more word utterance.

    ii. early grammatical rules.

    iii. transformations and operations.

    iv. primary linguistic data.

    v. prognostic capacity of the grammar.

Finally, such phenomena as discourse features, the performance-competence distinction and the creative aspect will not be discussed, because these topics are hardly worked out by McNeill.

3.1.1 *From the one word – to the two word utterance*

With obvious approval McNeill (1970a) refers to the study of De Laguna (1927) who considers holophrastic speech to be predicates

THE TRANSFORMATIONAL APPROACH 53

or comments made on the situation. These predicates or comments together with the extra linguistic context form a rudimentary kind of proposition, which is equivalent to a full sentence conceptually. The conclusion has to be, therefore, that when words are first combined, a number of grammatical relations already exists, or as it is formulated by McNeill: the new development is not the appearance of grammar but the appearance of patterned speech to express grammar. McNeill's solution to the problem of describing the child's competence at the holophrastic period can only be guessed at.

First of all he does not present any rule for the description of holophrastic sentences. It is true, that the three early grammatical rules which describe multiword utterances allow also one word utterances, but it will be clear that these rules are concerned with a later stage of development in which the multiword utterances occur. Furthermore it can be questioned whether the one word utterances in either one of the two periods will have the same character. Secondly, in the section "Semantic features" in which the holophrastic period is also discussed McNeill proposes changing dictionaries to describe the child's semantic system. Although, it is not quite clear how SEMANTIC must be understood, it can be assumed safely that according to McNeill some interrelation between grammar and semantics has to be accepted, because of the mention of Katz and Fodor (1963), Katz and Postal (1964) and Katz (1966). The development of the changing dictionaries runs as follows:

(1) from a holophrastic dictionary to a sentence dictionary and
(2) from a sentence dictionary to a word dictionary.

From McNeill's remark: "A child's first effort to compile a word dictionary [the third type of dictionary; T. G.] presumably does not occur earlier than his use of base rules." it ought to be concluded, that there is indeed a period in which no base structure rules are used to construct sentences. This conclusion, however, is in flat contradiction with McNeill's former remark that in the holophrastic period a number of grammatical relations already exist. The solution presented by McNeill cannot be accepted, unless one

also can take the view:

(a)   that grammar can only exist in patterned speech;
(b)   that linguistic knowledge in as far as it is not directly observed at the verbal level of the child's utterance is considered to be extra-linguistic;
(c)   that Chomsky's (1965) characterization of the deep structure, that the semantic interpretation of a sentence depends only on base structure rules is not true for the holophrastic sentence;
(d)   that the child in the holophrastic period when speaking simply picks out a word with one or another sentence interpretation from his total available set of words.

The most serious objection, however, against this solution is in my opinion the more psychological one that within McNeill's view a child's language system would totally and perhaps dramatically change with the first appearance of the two word sentence. This solution also has its implications for the prognostic capacity of the language acquisition theory and also for the evaluation criterion that all successive grammars ought to be based on just one linguistic theory. These matters, however, will be more extensively dealt with in 3.1.5.

3.1.2 *The early grammatical rules*

Because of my critical remarks on cross-categorization and on surface vs. deep structure problems, as dealt with in 2.4.3, one cannot expect that the early grammatical rules as presented by McNeill (1966a and 1970a) are in full agreement with linguistic theory as developed until respectively McNeill (1966) and McNeill (1970a). Besides the anomaly discussed in 2.4.3 there are other deficiencies that ought to be dealt with, such as:

1.   The noun has been taken, without any argument, as an alternative to the noun phrase, rather than as a particular realization of the noun phrase. This is the more astonishing, if we realize

that McNeill agrees with Brown and Bellugi's treatment of the evolution in child speech of noun phrases.

2. The pivot-class words occurring in the early grammatical rules cannot be considered to be differentiated. This means that all pivot words can be inserted in the place indicated by *P*. This, however, would lead to completely unacceptable sentences like:

    (14)   there here ball;
    (15)   allgone byebye hot.

There are finally two questions which I would like to discuss more extensively in separate sections, viz.:

3. The validity of optionally applicable rules in opposition to the deletion transformation (3.1.2.1);
4. The question whether the young child begins its productive linguistic career with a competence limited to the base structure of sentences (3.1.3).

3.1.2.1 *Optionally applicable rules vs. the deletion transformation*
From linguistic theory descriptions are applied like:

$$VP \rightarrow V + (NP)$$
$$NP \rightarrow (Det) + N.$$

When we apply such rules in the description of the language acquisition process we are first forced to emphasize again one of the central questions in psycholinguistic theory viz.: where are the exact bounds between deep structure and surface structure? As is known from 2.4.3 McNeill's standpoint on this topic is not quite clear. We take the most fruitful starting point for psycholinguistic research if we consider the distinction between deep structure and surface structure as running parallel to the distinction of the cognitive (= semantic) level and that of linguistic realization.[2] By doing this we have to ask whether the phenomenon of optionality is in accordance with the distinction just drawn.

[2]   See Bever (1970) for discussion.

Consider therefore the following sentences:

(16) daddy take
(17) daddy make
(18) take book
        etc.

It is possible to describe such sentences with an optional object noun phrase. The alternative solution is to take the object noun phrase into account for all three sentences, and to propose a deletion transformation in the case of (16) and (17) that expresses the fact that the child's knowledge is not totally actualized in the surface structure of the child sentence.

We can be sure that the latter assumption is the better one, because the child's knowledge of the action 'take' cannot really be considered to be present without the assumption, that an object of the action ought necessarily to be included. Furthermore, it is almost always clear from the context, situation and non-verbal but communicative behaviour of the child what is the object of the action.[3]

We are confronted with the same problem when dealing with the noun phrase. McNeill assumes the following rule to be present:

$$(19) \quad NP \rightarrow \begin{Bmatrix} (P) + N \\ N + N \end{Bmatrix}$$

In this case also the parentheses are used incorrectly. Consider the following child sentences (with additions to clarify their interpretation):

(20) that (is) Adam coat
(21) that (is) my coat
(22) that (is) (?)[4] coat
(23) (I) want that coat

---

[3] The solution of this problem also has its consequences for the description of pseudo-transitive verbs in adult language like *eat*. Such verbs have an object regardless the fact whether it is mentioned or not. A valid linguistic theory has to take this into account.

[4] (?) means that different words can be filled in, like *a, the, that, my, Adam*, etc.

(24) (I) want Adam coat
(25) (I) want (?) coat

These examples were taken from McNeill (1966a: 41) except for
(22) and (25). It is reasonable to assume that in the case of (22)
two interpretations are possible dependent on context and situa-
tion, viz.:

(22) i.   that is Adam/my coat
      ii. that is a/the coat

The latter interpretation is also possible because Adam knows
and uses the determiners *a* and *the* (see: McNeill 1966a: 22).
For (25) there are also two possible interpretations:

(25) i.   I want Adam/my coat
      ii. I want a/the/that coat

If we seriously intend to describe all semantic information of the
child utterance at the deep structure level of syntax, we ought to
assume a deep structure in which the following NP-generation rule
is present:

(26) NP → Det + N

which is strong enough to describe all variations of (22) and (25);
furthermore, we ought to accept a deletion transformation that is
capable of erasing those constituents that are not really uttered.
Notice, that *Adam* and other possessive relations are considered to
be sentences that are generated under the domain of the determiner,
as has been argued by Gruber (1967) and by Chomsky (1965).
Finally one should also take good notice that a rule like NP → N +
N according to Chomsky (1965) is not a phrase structure rule but
a rule schema that goes beyond the range of phrase structure rules.

3.1.3 *Do children really speak deep structure sentences?*

McNeill's remark that children begin their productive linguistic
career with a competence limited to the base structure of sentences
asks for our special attention.

First of all McNeill's statement implies the complete absence of transformations. It is difficult to see how a child can incorporate such a new phenomenon as transformations into grammar without changing the whole grammatical system developed thus far; at any rate this assumption violates the criterion formulated in the first chapter that just one theory should account for all developmental stages of language acquisition.

Secondly, McNeill's statement implies the complete absence of the deletion transformation. That this standpoint is inadequate can be demonstrated with the results of the foregoing section. In that section, it was mentioned that the absence of the deletion transformation is connected with McNeill's unclear standpoint concerning the distinction between deep and surface structure. Furthermore, it was ascertained that the optional rules are actually deletion transformations. It will be clear therefore, that at least some deletion transformations are present in the competence of the child at the start of his productive linguistic career.

A third point we ought to deal with is the permutation transformation. Because Brown's material that underlies McNeill's proposals has not been published it could scarcely be ascertained whether in that material utterances occur on which a permutation transformation can be supposed to have worked. In McNeill (1966a) only the following examples point in the direction of permutation:

(27) dats a your car
       2   1   3
(28) a dats cheese
      1   2   3

Because (27) and (28) are structurally synonymous we have to assume that they are transformational variants of one deep structure. However, in the material used in Gruber (1967) to demonstrate topicalization in child language, there are a lot of instances of permutated sentences, for example the generic subject (or the topic) occurred at the beginning of the sentence and at the end as well. In this case also that assumption is justified that a permutation

transformation is operating because in Chomsky's conception of deep structure there is no place for free order of the deep structure elements.

Finally, by the remark under discussion McNeill means apparently that such transformations as imperative, question, and declarative are not present in the competence of the child at the start of the language acquisition process, or at least that these transformations cannot be demonstrated actually to be present. For that reason McNeill's rules give information only in terms of the major categories as occurring in the subject NP and the verb phrase. This is the more surprising if we realize that many of the child utterances are desideratives,[5] i.e. special questions and imperatives. McNeill inclined to this kind of description because he rejected the possibility of also taking intonation into account in contrast with for instance Menyuk (1969) and Liebermann (1967). McNeill (1966a: 53): "It is difficult to see how intonation could guide a child to syntax; for no matter how strong the tendency is for children to imitate speech they receive from their parents, they will not imitate the appropriate feature unless important parts of the syntax have already been acquired." In other words, intonation can only be taken into account when a large proportion of the transformations already have been acquired. The question that follows and that remains unanswered is: how can a child utterance be qualified by the hearer in terms of for example declarative or question at all if there is not something like a generic transformation present that serves as a signal? Or in other words what kinds of sentences are generated by McNeill's rewriting system? First, one cannot maintain that all child sentences are declaratives after Bever, Fodor and Weksel's (1965) discussion of this topic. Furthermore, the declarative sentence is not generated at all by McNeill's rules. Apparently, only kernel strings are generated. As far as kernel sentences are concerned, one can do no better than to refer to Bever et al. (1965) who argue that a kernel sentence cannot actually be generated or uttered, because all sentences must have

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[5]   See Walburga von Raffler Engel (1968) for discussion.

a sentence qualification in terms of declarative, question, etc. The only possible solution for the present problem is to accept in deep structure the presence of such meaningful operators as QU(estion) and to look at how these operators are actualized in the surface structure of the sentence. This solution is also in agreement with the earlier sketched distinction between deep and surface structure.

To sum up briefly, we can say that McNeill's starting point that children would have only base structure rules in the earliest periods of language acquisition, is the basic misconception that not only influences his ambivalent conception of deep structure in a rather negative way, but that is also basic for all other misconceptions of McNeill's that have been criticized so far.

3.1.4 *McNeill's treatment of the primary linguistic data (p.l.d.)*

Throughout his studies, McNeill can be considered a nativist. Like other transformational (psycho)linguists he places great reliance upon Chomsky's language acquisition theory in which the innateness hypothesis plays an essential role. There is however, just one way to check the correctness of the present hypothesis, viz. by a systematic comparison of the primary linguistic data (i.e. the utterances of the child's environment that can be used by him to build his language system, i.e. the input data) with the child's productions (i.e. the output data). Necessary prerequisites for such a comparison are:

(1) a systematic analysis of the primary linguistic data, and
(2) a systematic analysis of the utterances of the child.

Only after such an investigation is one able to deduce from systematic differences between in- and output data, that the child is building a language system of his own that is independent from that of the input data.

Instead of this kind of research, we find in transformational literature on language acquisition, an underestimation and neglect of the systematic analysis of the primary linguistic data, and an

overestimation of the independent analysis of child language. Only incidental arguments to reject the influence of the primary linguistic data are given in general. For example Gruber (1967) found that children have a rather free order of elements in their utterances in as far as subject and predicate phrase were concerned. This phenomenon could not be traced back from the parent's speech on the record. This was enough reason to him to emphasize the correctness of the innateness hypothesis. But this is not a fair reasoning, because the topic was not investigated systematically: the record is too small for such a conclusion. Furthermore, there is a chance, that the parents, in contrast with the child, change their speech to the child because of the recordings.

McNeill is also one of those psycholinguists who place great reliance on the output analysis. However, he also gave some arguments why he treats the language acquisition process as an innate one, independent from the linguistic environment. The arguments are the following:

(1) Children eliminate some things an adult would consider essential in his telegram. This as an argument against the assumption that child speech can be compared with the telegraphic speech as used by the adults for their telegrams. McNeill passes over here the many identical phenomena of both kinds of speech. But besides this, there is an essential difference, that is possibly able to explain the divergence; viz. a telegram can, in contrast with child speech, be considered a more or less context independent message. It is known from linguistic investigations that transformations in general, and more particular the deletion transformations, depend on contextual data; which means for the present discussion that both kinds of speech can be considered probably to be based on the same principles of (economic) deletion: It means also that the context and the situation can cause the differences indicated by McNeill.

(2) The child combines things that an adult would not. On the one hand, this is a correct observation, on the other, however, it can be questioned whether this observation is linguistically relevant.

This question can only be answered positively, if we are sure that these odd combinations are not caused by a gap in the child's knowledge at the moment, but by the generic character of a linguistic rule applied by the child. In the case of the example given by McNeill:

(29)   a gas here

it means that the question ought to be answered whether the child knows the difference already between things that can be counted and those which cannot, or, the child has a rule like NP → Det + N in mind, in which the noun is undifferentiated thus far; this latter unless the fact that the child is able to differentiate at the cognitive level between mass and count nouns.

McNeill formulates his standpoint on the role of parental speech as follows: parental speech serves the function of helping a child to choose among a narrow set of possibilities defined by the linguistic universals. This formulation can be interpreted as: the only thing that is necessary for the language acquisition of the child is a linguistic environment. If there are no more arguments present than the two mentioned in the foregoing, this standpoint sounds rather gratuitous. This is the more the case when we realize that McNeill takes the so-called hierarchy of categories (2.4.3 and 2.1.4) as the central universal for learning language, despite the fact that Chomsky had already rejected this theory in 1965 as an incorrect framework for the description of language and more especially for the explanation of degrees of grammaticalness of sentences.

Furthermore, such a standpoint as developed by McNeill neglects the outcome of research on that sort of speech that typically is used by the adult when speaking to the child.[6]

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[6]   See for example Brown and Bellugi (1964), Ohnesorg (1948-1959), and Snow (1971) in which it has been found that there are big differences between adult to child speech and adult to adult speech.

3.1.5 *The prognostic capacity of grammar*

In 3.1.1 the transition from the stage of the one word utterance to that of the multiword utterance (the so-called syntactic period of language acquisition) was discussed. It was mentioned there, that McNeill's treatment of this transition is quite insufficient, in this sense that he is not able to explain how the child's strategy of language acquisition in the first stage (a dictionary) gradually passes into a totally different strategy: a grammar based on the basic grammatical relations. This is the reason that we are not able to give prognoses based on the child's system in the first period for the subsequent one. In other words McNeill's treatment of the one word utterance fails to express some essential properties of language on the basis of which not only the linguistic description of the present period can be accounted for but also that of the subsequent one. The prognostic capacity is also absent in the stage of the multiword utterance. From the rewriting rules as given in 3.4.3 no order of acquisition can be deduced that only depends on the generative system of the rules; we can for example apparently not state that the rule S → NP + VP is acquired before NP → Det + N or VP → N + VP, because only 15 percent of the two word utterances and 10 percent of the three word utterances have S → NP + VP as their basic rule. Besides, on the basis of the rules of 2.4.3 one cannot give prognoses for the acquisition of adverb phrases, auxiliaries, indirect objects, prepositional objects and the like, while the situation is even worse in as far as subordination, embedding, and the like is concerned. This brings us automatically to the final problem to be dealt with: the transition from the stage in which the child, according to McNeill's theory, only uses deep structure rules to generate sentences to that stage in which transformations are also applied. We can leave aside the question whether such stages really can be distinguished, for the only fact relevant to mention here is that this distinction is essential in McNeill's language acquisition theory. Implicitly such distinctions as the present one are drawn by McNeill, parallel to recent developments in linguistic theory. For instance, Adam, producing

semigrammatical sentences, gives up the theory of the hierarchy of categories (as Noam did in 1965) because of the fact that cross-classification could not be accounted for sufficiently by that theory. This way, one can also explain the present distinction: the child uses in the beginning an immediate constituent grammar like that developed by structuralists in the past; after a short while the need for precision and cognitive economy will motivate the appearance of the transformational part of grammar. Motivate, perhaps, but at any rate not explain. If we realize how many grim and endless discussions took place after Chomsky's publication of *Syntactic structures* (1957), until in the late nineteen sixties, we can hardly imagine that the child is able to change quite easily and nearly unnoticed his language acquisition theory from the one to the other.

If McNeill agreed with Chomsky in another respect, namely that all human languages – this means also all child languages at the different stages of development – can be described with just one linguistic theory, there would be no problem at all: the child does not give up theories on language acquisition; instead he will give up only hypotheses on particular realizations of linguistic theory.

In sum, McNeill's theory on language acquisition fails to account for prognostic capacity in the language acquisition process. The cause of this failure is that McNeill uses different linguistic theories for the explanation of different acquisitional stages.

3.2   MENYUK (1969)

In her book *Sentences children use* (1969) Paula Menyuk proposes a developmental grammar to describe the children's growing language capacity based on transformational generative grammar, as developed until Chomsky (1965) with some simple additions of more recent date. In this section I would like to deal with only those relevant aspects of her proposals that are distinct from McNeill's. These aspects are:

(1)   the description of one and two word utterances;
(2)   the syntactic description of the older child's utterances;

(3) deep structure vs. transformations.

In all three aspects the prognostic capacity of Menyuk's language acquisition theory will also be taken into account.[7]

3.2.1 *The description of one and two word utterances*

3.2.1.1 *Intonation*

Liebermann (1967) found experimental evidence that intonation is basic in language, especially in child language. This finding was important because such phonological aspects as intonation had been neglected hitherto in transformational analyses. For that reason one can fully agree with Menyuk when she in contrast with McNeill accounts for intonation in the description of the base. However, her solution, to take intonation as a deep structure category cannot be assumed to be correct, because of the following:

(1) intonation operates on the whole surface sentence in contrast with the deep structure categories, like noun phrase and predicate phrase;
(2) an intonation pattern can better be regarded as one of the possible surface structure characteristics of meaningful sentence operators like QU(estion), IMP(erative), etc. Actually Menyuk could have made the same assumption, because her intonational markers, falling, rising, and emphatic, run apparently rather parallel with the operators declarative, question and imperative. The last operator shows the present problem of the divergence between meaningful operators and surface characteristics;
(3) Menyuk does not follow, actually, a basic assumption of transformational theory that each sentence reading has its own deep structure description.

That this is not the case in Menyuk's proposal can be seen to follow from the next set of sentences:

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[7] For a more detailed discussion see Van der Geest (1971, 1972).

(30) candy?
(31) eat!
(32) apple!

which can have the following sentence interpretations:

(30) i. Is that a candy?
      ii. May I have a candy?
(31) i. You have to eat!
      ii. I want to eat!
(32) i. I want an apple!
      ii. (look) an apple!

In Menyuk's description for each pair of interpretations there is just one sentence description.

3.2.1.2 *The early grammatical rules*
The following rules account for the one and two word utterances in the earliest stages of development:

(33) S $\rightarrow$ topic + modifier + intonational marker (I.M.)

$$\text{topic} \rightarrow \begin{Bmatrix} \text{phonetic} \\ \text{phonological} \end{Bmatrix} \text{string}$$

$$\text{modifier} \rightarrow \begin{Bmatrix} \text{phonetic} \\ \text{phonological} \end{Bmatrix} \text{string}$$

$$\text{I.M.} \rightarrow (.),(?),(!).$$

The objections against this proposal amounts to the following:

(1) Apparently it is not possible yet to find criteria for any classification at the stage of the one word utterances. In the list of observed utterances, nouns, verbs, adjectives, and prepositions of the adult categories occur as one unspecified group. This is the more striking, if we realize that words (morphemes) like *daddy*, *mommy*, and *Rick* will have other intonation patterns and can co-occur with other modifiers than for example *drink, eat, take, on*, etc. Both groups have also other possible interpretations; we can for instance hardly imagine that *daddy*! is an imperative and

that sentences like *drink* and *take* can have the general sentence interpretations: 'that is drink/take', etc. That actually in the earliest stages no classification exists according to Menyuk can be deduced from her analysis; *down* and *up* are topics and *on* and *of* are modifiers; *mommy* is a modifier and *Rick* is a topic. Compare also, finally, Menyuk's remark: "Since, logically, classes are derived from functional relationships, rather than relationships from classes, it seems unlikely that the child has categorized the morphemes in his lexicon into classes ... at this stage." (30) Whether this is a correct assumption or not, it demonstrates clearly at any rate that Menyuk rejects the presence of linguistic classification at the first stages of language acquisition.

(2) Menyuk's usage of the term topic is incorrect. Gruber (1967) introduced this term in the description of child language to describe sentences like:

(34) (It) went wheels.
(35) Wheels, (it) went.

in which cases *wheels* is topic. This term means: the subject about which comment is made.[8] The rest of the sentence is the NEW information or the comment. Topic and comment can be defined in terms of respectively 'given' and 'new' in context and situation. It will be clear that a sentence cannot be simply a topic. In a discussion on *beer*, one can for example not just say *Beer* (= topic) but it is on the contrary possible to say *Fine* (= comment). Menyuk's rules do not only permit such ungrammatical topic sentences as *Beer*, but also block such grammatical sentences like *Fine*. Furthermore it is evident that the unuttered topic, considered as the earliest information that can be deduced from context and situation, ought to be described somehow at the deep structure level, because *Nice!* as a predication of a landscape or of music has different meanings.

(3) Menyuk's reintroduction of the term modifier as opposed to head (= Menyuk's topic) brings us back into structuralistic theory.

8   See Lyons (1968).

This is astonishing when one realizes that Menyuk bases herself on transformational theory. Also Menyuk's application of the modifier in the description of early child language is not without problems.

According to Menyuk the distinction between topic and modifier cannot be compared with the pivot-open distinction because the latter is rejected as superficial. However, this is not clear from the analysis. First of all, the rules are, like those of the pivot grammars, sequential instead of hierarchical. For this reason, one can derive only two functions (viz. [topic, S] and [modifier, S]) from the rules.[9] These functions are not well defined, because no categories are assumed to be present, while word order apparently cannot be taken as a distinctive feature either. Secondly, topic and modifier are characterized by means of adult functions and relations. These characterizations agree more or less with those assumed by McNeill for the open and pivot category.[10] If the adult functions and relations are generically present in the topic-modifier distinction, it cannot be seen how these functions develop from this distinction. As a final remark: in Menyuk's treatment of the early syntactic period it remains unclear how the child arrives at a two word utterance consisting of topic and modifier from a one word utterance that only consists of a topic. Together with the fact that the development of functions and relations, generically present in the topic/modifier distinction, is not dealt with; this last point of criticism points to the fact that prognostic capacity of grammar is not the essential condition in Menyuk's proposal.

3.2.2 *The syntactic description of the older children's utterances*

What is most striking in Menyuk's description of the older children's utterances is, that the rules differ from those of the adult's model, or even run counter to her methodological starting

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[9] We will leave the function [I.M., S] out of consideration.
[10] If the functions of topic and modifier ought to be characterized with adult categorial relations, I do not see why adult classification cannot be accounted for in this stage of language development.

point: the transformational generative theory. The following rules are illustrative of this point (see Menyuk 1969: 33):

(36) Det → Article, adjective, quantifier, demonstrative
(37) Aux → Aux_1 + Aux_2
(38) VP → Aux + VP
(39) main verb → *be* in context predicate

An example of an obvious mistake is the appearance of adverb at the left side of the arrow without a previous appearance at the right (p. 33, rules 15 and 16). As may be implicitly clear from the foregoing, there is a big gap between the rules of the early grammatical period as discussed in 3.2.1 and the rules of age 3, at which all adult classes in base structure rules are present. One can ask now when do the early grammatical rules change into that of the adult classes and functions? It can safely be stated that before age 2 children cannot go further with the topic and modifier distinction as a language acquisition device, or more sharply formulated: a very short time after the first appearance of the two word utterance the child will leave the topic/modifier distinction as the basis for building his language system because a three word utterance cannot be generated or described with this distinction. All corpora of data I had available indicate that there is not only a very short time between the first occurrences of respectively the first two and three word sentences (this is in contrast with literature), but also that there is no basic change in grammatical competence to be derived from this obviously unimportant extension. The question that remains to be answered in Menyuk's description is: how can children reject within a very short space of time one acquisitional device and put to use another device that can be considered totally different from the earlier one? This transition is not dealt with. Instead Menyuk starts the new period at 2.0 in which according to her the child uses the base structure rules of the adult; however, no arguments for this shift are given. The sequence of acquisition of base rules is only briefly sketched by the presentation of observations, while the underlying linguistic processes are not discussed.

The essential shortcomings dealt with here are again that of the prognostic capacity. Menyuk's description is rather observational; it is only a provisional inventory.

3.2.3 *Deep structure vs. transformations*

Menyuk bases her description of language acquisition merely on observable facts. The child's knowledge of language at a certain moment is described inasfar as it can be deduced directly from the child's utterances: when a new phenomenon appears in the child's utterance this phenomenon is assumed to be present in the base without any discussion of whether the child has previous knowledge of this phenomenon before its first appearance. It follows that grammar according to Menyuk is a permanently expanding and changing, a complementing and differentiating whole of base structure rules. She does not ask herself whether she is describing the performance or the competence of the child, and does not take transformations (except the adjective transformation perhaps) into account.

It will be evident, that in addition the status of the transformations and the distinction between deep and surface structure becomes confused by Menyuk's essentially structuralistic starting point of observability.[11]

Apparently also, Menyuk is convinced of the existence of a pretransformational stage, although it is nowhere formulated explicitly. After a short discussion of this topic Menyuk concludes that, "whether or not these early sentence types should be described as being derived from transformational operations on base structure strings or from base structure only is a matter of theoretical opinion and one's definition of transformations", after which statement the term transformation is not employed in the discussion of child language until we reach the 3-year old stage. Instead terms are used such as developmental change and operation. Without giving her opinions and definitions of transformations, Menyuk

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[11]   See also Bloom (1970b) and Shipley (1970) for discussion.

reintroduces the term transformation for the treatment of the older child's language.

From her treatment of transformations it cannot be deduced where the exact boundaries between deep and surface structure are. For instance, in the rules (p. 33) which are supposed to be valid from age 3 till 7 the adjective is considered to be generated by the base. On the same page, however, it is stated, that within the base rules plus the adjective transformation such sentences as:

(40)   a boy saw the pretty girl

can be described. At p. 84, finally, the adjective transformation is described and supposed also to be valid from age 3 to 7. Such remarks as these make it unclear whether the adjective is accounted for by a base rule or by a transformation.

Evidently also for child language it is true that a linguistically correct transformation need not necessarily correspond to psychological reality. Instead the child could use generic ad hoc rules directly generating the surface structure of the sentence (see for instance: Det → article, adjective, etc.).However, this solution is only permitted on the basis of some peculiarities, that otherwise cannot be explained. On this topic one can also hardly get any information except in a few cases (like for example on p. 49) in which Menyuk is dealing with deviant sentences as:

(41)   I shop in over there.

Her rejection of the embedding transformation (an otherwise rejected transformation since Chomsky 1965) in *I shop in there* and *I shop over there* to (41) are mainly based on psychological grounds:

  i.   the present type of deviation occurs a later age (first grade) when a great leap in expansion of basic structures is occurring;
  ii. conjunction and deletion have already been accomplished;
  iii. the redundancies occur in completely well formed sentences;
  iv. the previously observed pause between sentence and addition is not observed in these sentences.

These arguments are in my opinion not sufficient for rejecting the embedding transformation as the solution for this problem. They can on the contrary be regarded as arguments against this rejection because:

(1) the child needs a later age, when the system becomes very complex, more general rules which result in a simplification of the rule system;
(2) deletion and conjunction can after their learning period, be treated as transformations;[12]
(3) it is maybe a better explanation for the deviant sentence to say that because of all sorts of disturbing factors, the transformation has not been applied quite correctly.

From this discussion it may be clear that in the transformational development also the underlying process that determines to a high degree the prognostic capacity of the grammar is lacking. In connection with this prognostic capacity it can also be stated safely that the transition from the pretransformational stage to the transformational is not clearly described in Menyuk's analysis. For the above mentioned reasons Menyuk's analysis of the sentences children use can be considered at best as a provisional exploration of descriptive problems in the field of language acquisition.

3.3 LOIS BLOOM (1970a)

For more than one reason Bloom's (1970a) article can be considered one of the most important publications on early language acquisition so far. Bloom is especially interested in the semantic intent of utterances in order to reach a valid description of linguistic development.

The following aspects of her study are especially interesting for the present purpose:

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[12] See also Brown and Hanlon (1970).

i.   cognition and syntactic expression;
ii.   the operation of reduction;
iii. the prognostic capacity.

3.3.1 *Cognition (semantics) and syntactic expression*

The main purpose of Lois Bloom's study was to evaluate the children's language, basing herself on the assumption that it was possible to reach the semantics of children's sentences by considering what she calls 'non-linguistic information' from context, situation, and behaviour in relation to linguistic performance.[13] She argues that the child knows considerably more of his language than is evident from his utterances. This can be demonstrated with the following two different contexts for the child's production *mommy sock*:

i.   Kathryn picked up her mother's sock.
ii.   Mommy is putting Kathryn's sock on Kathryn.

It follows, that these utterances (with one and the same surface structure)[14] had different semantic interpretations, and because of this fact different deep structures. This demonstrates that there is a fuller conception of sentence structure within the child's competence, unrealized in his speech. In accordance with this conception Bloom proposes grammars for the three children at different times that differ considerably from those developed so far. For example:

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[13] It should be noticed that Bloom takes NON-LINGUISTIC as meaning not belonging to the act of speaking.
[14] Bloom adds that no formal features, like morphological inflection or prosodic intonation, that might distinguish the inherent structure of the two *mommy sock's* were actually present. It is not clear, however, whether stress is included or not. But if so, we can wonder how this statement can be correct. I would expect that parallel to i. and ii. the following differences in stress could be observed: (i. a) *mómmy sock* and (ii. a) *mommy sóck*. If this difference in stress is not actually present in the material, Bloom had to give more context in order to be able of explaining the identical stress in these cases.

i.   the pivot-open distinction, rejected as superficial, is only present in a very few instances in the earliest grammars (see also v.);

ii. grammar is not sequentially but hierarchically ordered;

iii. optional elements are substantially restricted;

iv. the deletion transformation accounts for differences between deep and surface structure from the beginning of language production;

v.   just one theory has been applied for the description of all stages in language acquisition, although pivot grammars as an initial theory of language acquisition are not explicitly rejected;

vi. it is emphasized all the time that child grammars can be compared with the adult model; this instead of the assumption that children build their own grammars.

Bloom's analysis is based on the seven factors of the speech event as introduced by Hymes (1964), and especially on the seventh factor, that of context and situation. Virtually she presents very careful analyses and procedures for the analysis in which utterances are confronted with their contexts. That she was sometimes too careful with her conclusions may appear from the fact that she assumes that one of the subjects, called Eric, does not have the grammatical function of subject at his disposal in either of the first grammars she writes for his speech (p. 153). This, however, is in contrast with the following example taken from her record of that period:

> Eric looking at a baby eating cereal
> Mother: what's she doing?
> Eric: eating cereal.

from which it can be deduced that Eric has at least knowledge of the subject function (= actor of the verb *eat*).

Apparently Bloom restricts the presence of a deep structure relation to those that occurred at least once in the sample. There is more evidence for this opinion of hers. Bloom assumes for example

that such pronouns as *I*, *it* and *he* and also nouns exist already at the deep structure level without the child having any previous knowledge of NP.[15] This means that Bloom's conception depends too much on mere surface structure information for the determination of the child's linguistic competence. It can be considered, therefore, an essential weakening of her starting point: the description of the semantic intent of the utterance.

3.3.2 *The operation of reduction*

As mentioned in the foregoing, the child has a fuller conception of language than might possibly appear from his utterances. In order to account for the differences between the underlying structure that accounts for the semantic interpretation, and the reduced surface structure of sentences as they are actually produced, Bloom relies not so much on optionality, but rather on a reduction transformation (a kind of developmental deletion transformation) that maps the richer base structure into the reduced surface form. As the theory of telegraphic speech does, Bloom considers the children's sentences as incomplete and fragmented. Children tend to utter generally the substantive lexical items. The latter receive heaviest stress in production, carry the most information, and are least predictable, while the weakly stressed and most predictable grammatical formatives are generally omitted. Bloom also mentions other reduction strategies. Accretion (that is the opposite of reduction) occurred in the development not with a strictly linear effect from the right to the left side of the sentence, but also with a hierarchical effect.

It is furthermore mentioned that the notion of reduction is presented as a grammatical process that attempts to explain the surface structure of children's sentences, rather than a notion that describes how children's sentences differ from the adult model.

[15] This is not only in contrast with linguistic intuition (according to which all words or groups of words that can have syntactic functions like subject and object are noun phrases) but also with the psychological reality of the NP as demonstrated in Brown and Bellugi (1964).

It is a great pity that Bloom does not present more essential information about the process of decreasing reduction or sentence accretion because this process is the central and most important one in her study, but also because reduction of elements in a sentence alone gives scarcely any information on language development. What we need is the formulation of procedures according to which the child is permitted to omit certain elements of the deep structure of the sentence in the actual utterance. This way it will be possible to demonstrate priorities in reduction, like: grammatical formatives can be more easily omitted than relatively unstressed content words. Another advantage would possibly be that perhaps such developmental changes can also be explained by means of such procedures.

By restricting herself to a rather descriptive cadre, Bloom missed essentially a chance of presenting, in spite of some good proposals, new directions of research in developmental psycholinguistics.

3.3.3 *The prognostic capacity*

In the preceding section the lack of procedures underlying the appearance of reduction transformations has been dealt with. It was found that perhaps developmental changes can also be explained by means of such procedures. In other words, the lack of procedures can be considered a shortcoming in prognostic capacity. Bloom's interest in the presentation of careful descriptions of the children's utterances produced at several stages can be regarded as responsible for this lack. However, the title and subtitle of her study promise more than simply performance data, namely the description of language DEVELOPMENT and of form and function in EMERGING GRAMMARS. Despite the many valid treatments of questions in the field of language acquisition research, this point of criticism makes her study disappointing. There are enough examples to illustrate that Bloom's methodological restriction to the description of her records is actually in conflict with the aim of prognostic capacity.

First, Bloom analyzed the different successive grammars of each

child rather independently from each other. In some cases she only mentioned the differences between the successive grammars. This comparison was incidental and far from systematic. The eventual underlying developmental differences between the successive grammars are not dealt with. On the contrary, the grammars of Gia are compared more or less systematically with those of Kathryn and the grammar of Eric with those of both Kathryn and Gia. The advantage of such a comparison is that one can establish whether or not there is evidence for the conclusion that child language is coherent, but it does not say anything about the process of language development.

Secondly, Bloom does not reject systematically the pivot-open distinction, although she emphasizes more than once that this distinction describes children's utterances in only the most superficial way. Actually, Bloom assumes that it is possible that children begin their grammatical career with a pivot grammar. The uncertainty at this point is caused by the fact that she started to collect her data after the first appearances of the two word sentence. Pivots are also assumed to occur in the grammar of all three children, although particularly in the three successive grammars of Eric. It is not quite clear when and how the eventual transition from pivot to ordinary phrase structure rules takes place.

Because of the fact that not just one linguistic theory is actually proposed for the description of development, no prognoses can be presented on how language develops.

There are enough points in Bloom's study to account for the prognostic capacity. First, Bloom's emphasis that the earliest language systems (for example for negation) and the adult system are more similar than that they are different, can deliver a perspective in which the child's grammar of each observed period can be compared systematically (within just one theory) with adult grammar. On that basis it will perhaps be possible to find regularities in the process underlying the developmental changes. Furthermore, the operation of reduction can possibly be elaborated in such a way that procedures can be found according to which children build up bigger units.

To sum up it can be stated that Bloom's notions of reduction and of the importance of context and children's behaviour provide remarkable good starting points for research in developmental linguistics. Her own analysis of child language is somewhat disappointing because of her concentration on the careful description of the various successive grammars to the exclusion of prognostic analysis.

3.4 EVALUATION OF LANGUAGE ACQUISITION THEORIES BASED ON THE TRANSFORMATIONAL PRINCIPLE

In Figure 7 a table is presented of the linguistic and psycholinguistic criteria compared in respect of the three language acquisi-

		McNeill	Menyuk	Bloom
i.	generative capacity	+	+	+
ii.	explicitness	+	+	+
	a. class	+	—	+
	b. function	+	+	+
	c. semantics	—	—	+
iii.	creative aspect	—	—	+
iv.	formal universals	+	+	—
	substantive universals	+	+	—
v.	word order	+	+	+
vi.	operations	—	—	+
vii.	transformations	—	+	+
viii.	transformations and semantics	—	—	+
i.	one linguistic theory	—	—	+/?[16]
ii.	prognostic capacity	—	—	+/?
iii.	discourse	—	—	+
iv.	non verbal behaviour	—	—	+
v.	perception	—	—	—
	concept formation	+	+	+
	memory span	—	—	—
vi.	generic explanatory power	—	—	+/?
vii.	primary linguistic data	—	—	—

Figure 7

[16]   +/? means potentially present but not elaborated.

tion theories dealt with in this chapter. From this figure it is clear that the pure linguistic criteria are met one way or another by the three studies in general. Only Bloom's study does not discuss the formal and substantive universals. The psycholinguistic criteria, however, are not accounted for to the same degree. In particular, McNeill and Menyuk apparently restricted themselves to a pure linguistic description of the material without discussing the psycholinguistic relevance of their proposals.

The following questions also remain unanswered in Bloom's study:

(a) the children's perception of adult utterances;
(b) the children's restrictions in their linguistic activities of both speech production and perception caused by their rather undeveloped short term memory;
(c) the role primary linguistic data play in the language acquisition process.

Furthermore, there are three criteria scarcely met by Bloom's study, viz.:

(1) that only one linguistic theory should be applied in the description of successive child grammars;
(2) the prognostic capacity;
(3) the generic explanatory power.

The latter three points can be considered to be implicitly present in Bloom's proposal. Therefore, the transformational analysis needs, strictly speaking, only an elaboration of these latter three points, and in addition an extension or change so that the earlier points (a-c) are also met.

THE APPROACH USED BY BROWN AND COLLEAGUES (REFERRED TO AS TELEGRAPHIC SPEECH)

Children's utterances can be considered as rather incomplete and fragmented in comparison to adult speech. Elements are omitted that can generally be predicted or be deduced from context and situation and from children's behaviour. These are the reasons why Brown and Fraser (1964) called such utterances telegraphic. Central in such a characterization is the systematic comparison of child speech with that of the adult. Brown and Fraser's characterization of children's utterances led to an interesting collection of studies in the field of language acquisition, mainly written under the leadership of Roger Brown at Harvard. Although the idea of telegraphic speech has come to the background one can best consider the name TELEGRAPHIC SPEECH as a mere nomenclature for the kind of research that takes the interaction between the child and the adult as the main object in the study of language acquisition. The name can be justified because the idea of telegraphic speech has never been abandoned but only modified in a sense. This, because the processes of interaction appeared to be more difficult to uncover than was originally expected. The following subjects will be discussed in separate sections:

    i. telegraphic speech as a psychological approach;
    ii. some psychological phenomena accounted for;
    iii. some shortcomings of the telegraphic speech analysis.

4.1 TELEGRAPHIC SPEECH AS A PSYCHOLOGICAL APPROACH

In chapter 3 it was found that most of the linguistic criteria for language acquisition research are globally met by the transforma-

tional analysis applied by McNeill, Menyuk and Bloom. Telegraphic speech on the contrary can be considered to be concerned primarily with the psychological processes accompanying language development. Starting from a comparison of child speech with the adult model – resulting in the conclusion that child speech was more similar to than that it was different from the adult model – it was asked how this similarity could be explained. Central in this problem was, what mechanisms the child ought to be presupposed to have in order to be able to explain how the child comes from the primary linguistic data to his own successive language systems.

This approach is in contrast with the analyses discussed in the foregoing. In these analyses, the linguistic description of the child's utterances has most of the time as its central and ultimate purpose to get an insight into the child's knowledge of language (i.e. the competence) at a certain stage of development.

That is the reason why in these cases the information on the developmental processes was not very concise. In addition telegraphic speech analyses the children's utterances, however, never as an ultimate purpose, but rather in function of a directly psychological problem. The thesis that telegraphic speech analysis is essentially psychological can be demonstrated by the fact that this analysis can be applied with any linguistic theory whatever. In the past, not only the pivot-open distinction was used for the analysis,[1] but also the transformational approach.[2] Actually, the telegraphic speech analysis is not bound to any linguistic theory: it is interested in how language develops, rather than in the question of what linguistic aspects of child language can be observed or what aspects are changing. These latter questions are just subparts of the analysis, although they are essential. That is to say, by means of the linguistic analysis one can get an insight into the process of language acquisition.[3] Therefore, the question posits itself whether

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[1] See for example Brown and Fraser (1964) and Brown (1964).
[2] See for example Brown, Cazden and Bellugi (1969) and Brown and Hanlon (1970).
[3] See for example Brown and Bellugi (1964).

or not the telegraphic speech approach accompanied with the
most valid linguistic theory is the most acceptable framework for
research in language acquisition. Because the theory of telegraphic
speech takes its main point of departure as the process,[4] it will
not be restricted to the analysis of the output data; while taking
for granted Chomsky's innateness hypothesis, from which it
apparently can be deduced that the role of the parents in language
acquisition is just of superficial interest, the child–adult inter-
action is dealt with in as far as this interaction can influence
the process. In addition the role of imitation, of overt practice,
and that of memory span are topics in the studies under discussion.
In the next section topics like these will be discussed briefly.

4.2 SOME PSYCHOLOGICAL PHENOMENA ACCOUNTED FOR

As already mentioned in the preceding section the telegraphic
speech analysis is mainly concerned with the psychological process
underlying language development. In order to obtain knowledge of
these processes, successive grammars are written. Comparison of
these grammars delivers a set of linguistic changes ordered eventual-
ly in a chronological sequence.

The central questions now are, what developmental changes are
caused by the child's specific ability to learn language. In as far
as the language learning situation is concerned we can ask how the
interaction between the adult language speaker and the language
learning child takes place? What parts are the child and the adult
playing in their communication to each other? Formulated differ-
ently, this latter question means: which of the developmental
changes can be explained from respectively the role of the adult
and that of the child?

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[4] This is in contrast with McNeill's (1970) statement that telegraphic speech
is just the outcome of the process rather than the process itself; this as an argu-
ment against the theory of telegraphic speech. However, Brown and his col-
leagues will evidently fully agree with this point, as will become evident from
this chapter.

I think that this brief introduction will be sufficient in order to understand the questions dealt with in the next three sections.

4.2.1 *The child's role in linguistic change*

The telegraphic speech analysis has from the beginning dealt with child psychological phenomena that possibly could have explanatory value for the process of language acquisition, such as: short term memory, spontaneous imitation, the child's comprehension, learning strategies and communication pressure. These phenomena will briefly be dealt with now.

Brown and Fraser (1964) found that one should not only account for limitations on memory span in as far as speech production is concerned but also for limitations in perception. This means not only that children's utterances are fragmented but also that the adult utterance is not perceived in its totality by the child (see also Clark 1972).

Brown and Bellugi (1964) explain the outcome of their analysis of child speech also with limitations of memory span but now on speech production. In the same study Brown and Bellugi deal with imitation. By imitation is meant that imitative utterance that occurs spontaneously in the speech of the child. They found that this type of imitation was grammatically more progressive, i.e., grammatical structures occurred in imitations that had not been found up till then in spontaneous speech. They also found that imitations had the same general characteristics as the child's spontaneous productions at least in as far as these types were both compared with the utterances of the adult. Fraser, Bellugi and Brown found that the child's production was smaller than the child's comprehension. Shipley et al. (1969) had the same results in their experiment. Smith (1970) mentions that comprehension and production in very young children are almost equal. Such results give insight into how new structures may arrive in the child's competence: recognition or knowledge of structures apparently takes place before these structures occur in or can be deduced from the child's utterances. (See Clark 1972 for discussion.)

Brown and Hanlon (1970) found that derivational complexity[5] could account for the order of emergence of new sentence structures. Length of the sentence and frequency of occurrence in the speech of the mother could also account for the emergence of sentence structures but not as sufficiently as derivational complexity did. This is the reason why derivational complexity may possibly play an important role in the child's learning strategies. In as far as communication pressure is concerned: the question of whether or not illformed constructions in the child speech give way to wellformed constructions because there is a selection pressure in communication which favors the latter,' is answered negatively by Brown and Hanlon (1970).

4.2.2 *The adult's role in linguistic change*

Brown and Bellugi (1964) deal with the problem of whether or not all adult speech can be considered to be useful material for the child in learning his language. They argue quite convincingly that only the adult utterances spoken to the child can be used by him. This is in contrast with for example Bever, Fodor and Weksel (1965), who do not even exclude data deriving from television as possible primary linguistic data.

Brown and Bellugi found furthermore that the adult to child utterances in their material all had the same characteristics:

1. they were all perfectly grammatical;
2. all had a rather simple linguistic structure;
3. they did not consist of more than 6 or 7 words each.

The telegraphic speech analysis was used also to investigate such tutorial devices as expansion and modeling.

Brown, Cazden and Bellugi (1969) found that modeling, contradictory to their hypothesis, was the most effective aid for the

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[5] The type of derivational complexity Brown and Hanlon are discussing is called cumulative by them, which means: sentence y has greater cumulative complexity than x if y follows all the rules applied in x plus at least one rule not applied in x.

child learning his language.[6] Brown and Hanlon (1970) investigated contingent approval and disapproval. They supposed that syntactically correct utterances come to prevail over those that are incorrect through the operation of positive reinforcement and punishment on the part of the adults. The results of this investigation were negative. Parents responded apparently with signs of approval like *correct*, *yes*, *all right*, etc. if a syntactically incorrect but meaningful utterance was used: approval and disapproval were not primarily linked to the grammatical form of the utterance but rather to the truth value of the proposition.

It might appear from Brown and Hanlon's conclusion that such investigations are useful for the understanding of the language acquisition process. We suspect that the only force towards grammaticality operating on the child is the occasional mismatch between his theory of the structure of language and the data he receives. This formulation can be brought into accordance with McCawley's (1967) criticism on Chomsky's language acquisition theory; McCawley's modification in which feedback is introduced can be represented as follows:

P.L.D. ⟶ LAD ⟶ grammar
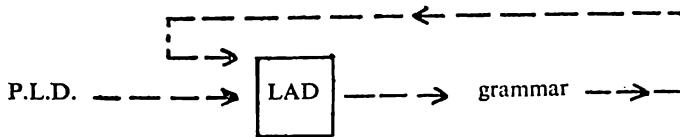
4.2.3 The interaction between the child and the adult

One of the main characteristics of the telegraphic speech approach is the comparison of child speech (output) with the primary linguistic data (input). The original evidence for the correctness of this type of research is descended from Brown and Bellugi (1964). They found that child imitations and the parental sentences that were imitated had the same characteristics:

1. the same order of constituents;
2. the stressed words of the parental sentence are uttered by the child;

[6] However, a replication of Brown, Cazden and Bellugi's experiment by Feldman (1970) had negative results.

3. the distribution of stress (primary and secondary stress) was identical.

The same characteristics were also found after comparison of the child's sentence with the parental expansion. The confrontation of the characteristics of parental speech dealt with in the foregoing section with the three points mentioned here may lead to the view that the interaction between child and adult is more essential in the language acquisition process than has been assumed hitherto.

The investigations that followed all found similarities between the child's and the adult's speech throughout the developmental process; for example high frequency of a certain structure on the part of the adult at the time this structure is actually learned by the child (see Brown and Hanlon). The interaction routines with occasional questions[7] reported by Brown, Cazden and Bellugi (1968) is interesting for the present discussion. Occasional questions are uttered in two different circumstances:

  i. when the mother did not understand a part of the child's utterance;
  ii. after the child did not understand the normal question.

The occasional questions in their material were more likely to elicit an appropriate answer than was the normal question form: the occasional form is apparently an intermediate stage in the child's acquisition of the wh-sentence structure.

It is a pity that the later studies within the telegraphic speech tradition incline more and more to the hypothesis that the child's innate abilities are the only variables in the process of language acquisition. This is the more regretable because these studies demonstrate overwhelmingly in the qualitative parts of their analyses that there is something particular going on with the input data, for example the striking correspondence between mother-and-child utterances (Brown and Bellugi 1964) and the role of expansion, modeling and occasional questions. This is the reason

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[7] i.e. wh-questions with the same order of constituents as the declarative sentences have: for example *You want what?* and *I will put it where?*

why I do not understand Brown, Cazden and Bellugi's pessimism on the topic that training variables, except maybe for modeling, do not have any effect on the development of grammatical knowledge in the child.

4.3 SHORTCOMINGS OF TELEGRAPHIC SPEECH ANALYSIS

From the preceding it can be concluded that the shortcomings of the telegraphic speech analysis are mainly linguistic. From the comment of Brown and Hanlon (1970) that a lag of about five years seems always to exist between linguistics and psycholinguistics, the impression might be got that these shortcomings are just a matter of time. It is my main purpose here to demonstrate that this is not the only reason, but that in addition on the contrary the two separate disciplines, linguistics and psychology cause a systematic lag that is difficult to overcome.

Only the following topics will be discussed:

    i.   the original evidence for the telegraphic speech analysis;

    ii. evaluation criteria derived from the field of language acquisition.

4.3.1 *The original evidence of the telegraphic speech analysis*

As has been mentioned in the preceding, the limitations of memory span were regarded as responsible for the child's fragmented speech. However, not only the limitations of memory span on sentence production were dealt with but also those of speech perception (Brown and Fraser 1964). This may mean that the adult's utterance is only partially perceived by the child, for example the stressed words. One would like to explain the characteristics of the child utterances from these limitations. What this characterization, however, failed to express was:

    i.   what parts of the adult utterance are perceived by the child?

ii. what is the meaning or semantic content of the perceived
     part of the adult sentence?
iii. what is the meaning or the semantic intent of the child's
     utterance?

That the semantics of the child's utterances and of the fragmentally
perceived adult utterances could not be accounted for, can be
explained from the shortcomings of psycholinguistic analysis at
that time: viz. that of the pivot grammar. On the other hand,
however, it was theoretically possible to detect what words a
child perceived of an adult's utterance; that is to say not only
are the content words of an adult's utterance perceived, but also
function words, because they occur in the earliest child speech.[8]
It is apparently also a false assumption that only the last words or
the first words of the adult utterance are perceived, because of the
results. The most probable conclusion is that the most heavily
stressed words are perceived by the child. And after this conclusion
it is possible to deal with the problem of semantics. Another
shortcoming of the original telegraphic speech analysis is that one
was not able to detect the psycholinguistic processes underlying
the growth of child utterances. This was perhaps caused by the
fact that there is not a linguistic theory that takes stress and the
description of elliptical sentences into account, and also by the
fact that the linguistic theories do not deal with developmental
syntax but only with the adult knowledge of language. For that
reason one will not find linguistic tools that are valid for the
description of language growth.

4.3.2 *Evaluation criteria drawn from the field of language acquisition*

It will be evident that, if one tries to demonstrate that the short-
comings of the present type of analysis are not only caused by the
state of affairs of linguistics, one can best demonstrate that impure
linguistic criteria are violated. For that reason in this section the
criteria of section 1.2 will be discussed.

[8]   See for the paradox between pivot grammar and telegraphic speech Bloom
[1970].

(i) *The prognostic capacity*

In general the prognostic capacity has not been accounted for, at least not explicitly. One can evidently deduce for instance from Brown and Bellugi's (1964) results that generally the content words appear in child speech before function words are used. Or that the distribution of stress indicates how the child sentence will be filled in. However, that is not prognostic capacity in the same sense as meant in this study. Such a capacity also ought to account for the semantic development, the development of deep structure, the first appearances of pronouns, auxiliaries, articles, etc.

Actually, in the later studies, there is a tendency to put the prognostic capacity outside the scope of research. Consider for example Brown and Hanlon (1970) who assume that one learns language along the lines of derivational complexity. This is regarded an innate ability; i.e. it cannot be investigated.

(ii) *Discourse features*

One of the main endowments the human being possesses is not that he can produce all sentences in his language, but that he is able to react adequately with language behaviour in new situations and contexts. This means that an adequate theory of language acquisition ought to deal with such phenomena as context, situation and non-linguistic but communicative behaviour. This, however, is not the only reason why these three phenomena are essential. As argued by Bloom (1970) the child's knowledge of language is not as small as might be deduced from his utterances. She demonstrates quite convincingly that a systematic analysis of both context, situation and behaviour are necessary to reach the semantic intent of the child.

The telegraphic speech analysis investigates the child's utterances as isolated from its actual setting. This is the more regrettable because discourse features determine to a high degree what parts of a sentence can be omitted as less central in the attention and what parts of the sentence receive the heaviest stress and what not. The neglect of discourse features in language acquisition research is not only caused by a lag in linguistic theory to the extent that

linguistics is only interested in the grammars of isolated sentences, but also by a lag in psycholinguistic theory in as far as the problems of performance such as attention, intention, choice (for example between two alternative constructions), the creative aspect of language use, etc. are not accounted for.

(iii) *One linguistic theory*

In general just one linguistic theory was applied per study. Because no specific linguistic theory is involved in the present approach, different ones could be tried out from pivot to transformational grammar. With linguistic theory a tendency can be observed to avoid the original problem. Initially the central problem was: how do the linguistic structures in child language develop? In the later studies, however, this question moved to the background. This can be demonstrated with Brown and Hanlon (1970) in which study the acquisitional order of ADULT structures was investigated and not the lines along which each separate structure is developed.

4.4 EVALUATION OF THE TELEGRAPHIC SPEECH ANALYSIS

It will be evident that, although criticism is possible within the area of the psycholinguistic criteria for language acquisition research, in the telegraphic speech analysis these criteria are generally met. Consider for example Figure 8 in which a table is presented of the criteria (both linguistic and psycholinguistic) compared with the telegraphic speech analysis.

From this table it is clear that the pure linguistic criteria are only roughly dealt with; this, however, is in contrast with the psycholinguistic criteria that apart from the discourse features and the non verbal behaviour are met in one or other way. The positive scores in the linguistic criteria are caused by the later studies in general, viz. those of Brown, Cazden and Bellugi (1969) and of Brown and Hanlon (1970) which in a sense also can be considered studies within the theory of transformational grammar, although with special interest in the interaction between child and parent.

i.	generative capacity	+
ii.	explicitness	+
	a. class	+
	b. function	+
	c. semantics	—
iii.	creative aspect	—
iv.	formal universal	—
	substantive universal	—
v.	word order	—
vi.	operation	÷
vii.	transformations	+
viii.	transformations and semantics	—

i.	one linguistic theory	+
ii.	prognostic capacity	+/?
iii.	discourse	—
iv.	non verbal behaviour	—
v.	perception	+
	concept formation	+
	memory span	+
vi.	generic explanatory	+/?
vii.	primary linguistic data	+

Figure 8.   Telegraphic speech evaluation.

GENERAL CONCLUSIONS

Instead of an extensive discussion on the question of how to go on with language acquisition research on the basis of the evaluation of the foregoing studies, here a table (Figure 9) will be presented in which all data of Figures 6, 7, and 8 in as far as interesting for the present purpose is mentioned. From this table interesting conclusions can be deduced.

It is far too simplistic to state that a valid psycholinguistic theory on language acquisition can emerge from a mere conjunction of the criteria accounted for by the present three approaches on language development.

First of all it should be noticed that in some cases all three types accounted for the same criteria; see for instance *class* and *function*. It will be evident that the concepts of 'class' in all three theories are different, and are not mutually replaceable. Secondly, each modification of an aspect of the theory will possibly include a modification of the whole theory accounted for. Finally, it is evident from the preceding that, although a specific criterion is accounted for within one of the three types of analysis, it is quite uncertain whether the treatment of this criterion is correct or as valid as in the competing analyses.

Taking these three remarks into account, we can deduce from Figure 9 that the pivot-open distinction in its most powerful formulation (McNeill 1966-1970) is the weakest analysis not only if we are just looking at the criteria accounted for but also taking the qualitative treatment as discussed in chapter 2 into account. This way, the transformational analysis meets all linguistic criteria but does not meet all psycholinguistic criteria as well. These criteria are generally met by the telegraphic speech analysis. For that

	criteria	p-o (hierarchical)[1]	transformational	telegraphic
i.	generative capacity	+	+	+
ii.	explicitness	+	+	+
	a. class	+	+	+
	b. function	+	+	+
	c. semantics	—	+	—
iii.	creative aspect	—	+	—
iv.	formal universal	+	+	—
	substantive universal	+	+	—
v.	word order	+	+	—
vi.	operation	—	+	+
vii.	transformations	—	+	+
viii.	transformations and semantics	—	+	—
i.	one linguistic theory	—	+/?	+
ii.	prognostic capacity	—	+/?	+/?
iii.	discourse features	—	+	—
iv.	non verbal behaviour	—	+	—
v.	perception	—	—	+
	concept formation	+	+	+
	memory span	—	—	+
vi.	generic explanatory power	—	+/?	+/?
vii.	primary linguistic data	—	—	+

Figure 9.   Evaluation of the three approaches dealt with in this study.

reason it is perhaps worthwhile to investigate how the two types of analyses can be associated in order to get a more explanatorily valid theory on language acquisition. That this will be possible can be deduced from the fact that the transformational analysis of child language is mainly linguistic and the telegraphic approach is essentially psychological. This probably means that the two analyses are not contradictory.

[1]   See Figure 6 under hierarchical structure.

It will also have to be taken into account that not all criteria were dealt with quite correctly. See for example the psycholinguistic criteria ii. and iii. As a last remark it will again be emphasized that one should take issue with the fact that an eventual conjunction of the two types of analysis might possibly influence the elaboration of the other criteria accounted for.

In a next study (Van der Geest, "Aspects of Communicative Competence"; in preparation) I will deal with some topics which are especially relevant in both communicative linguistic theory and in language acquisition and which are extremely interesting for the investigation of how the two earlier mentioned types of analysis can be associated in order to get a more explanatory valid theory of language development.

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