Emmon W. Bach
On Some Recurrent Types of Transformations
Hans Gnin
The Relation Between Inner and Outer Form
Peter N. Ladefoged
The Nature of General Phonetic Theories
Robert E. Longacre
Transformational Parameters in Tagmemic Field Structures
Joshua A. Fishman
Varieties of Ethnicity and Varieties of Language Consciousness
John J. Gumperz
Linguistic Repertoires, Grammars and Second Language Instruction
William Labov
On the Mechanism of Linguistic Change
Norman B. Levin
Contrived Speech in Washington
Carl A. Lefevre
Linguistics and the Teaching of Reading
William F. Mackey
Method Analysis
William C. Stokoe, Jr.
Repairing Gaps in the Vocal-Auditory Symbol System
Peter Strevens
Recent British Developments in Language Teaching
Martin Joos
The Role of the Center for Applied Linguistics
TABLE OF CONTENTS

Foreword .................................................. v

WELCOMING REMARKS

Rev. Frank L. Fadner, S.J., Regent, Institute of Languages and Linguistics ............................................................ vii
Robert Lado, Dean, Institute of Languages and Linguistics ........................................... viii

I. APPROACHES TO LINGUISTIC ANALYSIS

Emmon Bach
   *On Some Recurrent Types of Transformations* ................................................................. 3
Hans Glinz
   *The Relation between Inner and Outer Form* ............................................................... 19
Peter Ladefoged
   *The Nature of General Phonetic Theories* ................................................................. 27
Robert E. Longacre
   *Transformational Parameters in Tagmemic Field Structures* ........................................ 43
DISCUSSION .................................................. 59

II. LANGUAGE AND SOCIETY

Joshua A. Fishman
   *Varieties of Ethnicity and Varieties of Language Consciousness* ................................ 69
John J. Gumperz
   *Linguistic Repertoires, Grammars and Second Language Instruction* .......................... 81
William Labov
   *On the Mechanism of Linguistic Change* .................................................................. 91
Norman B. Levin
   *Contrived Speech in Washington* ........................................................................... 115
DISCUSSION .................................................. 129

III. TEACHING LANGUAGE SKILLS

Carl A. Lefevre
   *Linguistics and the Teaching of Reading* .............................................................. 139
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>William F. Mackey</td>
<td>Method Analysis</td>
<td>149</td>
</tr>
<tr>
<td>William C. Stokoe, Jr.</td>
<td>Repairing the Gaps in the Vocal-Auditory Symbol System</td>
<td>163</td>
</tr>
<tr>
<td>Peter Strevens</td>
<td>Recent British Developments in Language Teaching</td>
<td>171</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td></td>
<td>181</td>
</tr>
</tbody>
</table>

**IV. CLOSING LUNCHEON ADDRESS**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin Joos</td>
<td>The Role of the Center for Applied Linguistics</td>
<td>189</td>
</tr>
</tbody>
</table>

**PROGRAM**                                                                 201

**LIST OF REGISTRANTS**                                                   203
FOREWORD

For the past decade and a half Georgetown University's annual Round Table Meetings have provided a forum for the dissemination and discussion of all that is new, interesting, controversial and valuable in linguistics and related disciplines. Scholars with various interests present their findings and interpretations to an audience which each year grows larger. The 16th Round Table Meeting, held March 26 and 27, 1965, brought fourteen stimulating speakers before an appreciative audience of some 400 people. The present monograph presents the proceedings of that meeting.

Following the format of its immediate predecessors, the 16th Round Table Meeting consisted of three panels, in each of which four papers were read. The panels were devoted, respectively, to topics of continuing concern: Approaches to Linguistic Analysis, Language and Society, and Teaching Language Skills. The papers and the discussion which followed them are contained here. There were, in addition, two luncheon addresses, one of which, unfortunately, could not be included in this monograph.

Thanks are due to several people who have helped in the publication of this volume: to the participants for their prompt submission of manuscripts; to Leslie Hanzely and Joseph Roy for recording the discussions; to Mary Sue Pascarella for transcribing the recording; to Mrs. Ruth Weaver for preparation of copy; to Daniel Woodhead for lay-out design; and to Port City Press for painstaking efforts in the printing.

CHARLES W. KREIDLER
Editor
WELCOMING REMARKS by the Rev. Frank L. Fadner, S. J.
Regent, Institute of Languages and Linguistics

Ladies and Gentlemen, Colleagues, Participants and Guests at Georgetown University's Annual Round Table on Linguistics and Language Studies:

Toward the beginning of the month, your chairman, Dr. Kreidler, wrote me a letter, inviting me to continue a tradition by opening this conference with a "few words of welcome," as he put it. I propose it's not quite flattering to be taken as a subject of tradition. It makes one feel himself a real part of antiquity. But the implication is inevitable. These Round Table Meetings of ours here at the Institute have become a tradition.

It's hard to believe that this is the 16th such occasion since the inauguration of our Institute back in 1949. And as we look back we can't fail to be impressed with the quantity of things that we have learned here—the subjects discussed have ranged all the way from a practical application of this country's needs for language study; the relation of linguistic science to educational psychology and classroom guidance and procedure; valuable speculation on meaning and language structure; anthropology and language; language and culture; all the way out to the intricacies and technicalities of machine translation, as well as implications and possibilities of bilingualism. And, certainly, it has been salutary for us continuously and growingly to realize our smallness—and our effectiveness—in this awesome expanding universe of the renaissance in which we are living.

This year's Round Table program should be a source of great gratification and satisfaction. It represents a logical progression from the theoretical to the practical, from the abstract to the concrete, because I see again we are ending up in the classroom, with considerations of methodology which are, after all, of such great importance to those of us who "gladly teach."

And so a word of welcome is in order. I understand that that grand word "welcome" is the old Anglo-Saxon compound meaning a guest who comes to please the will of another, and in the name of the President and Board of Directors of this University I am calling each and every one of you on the premises this morning just that precisely.

By way of an invocation, if you like, I think we should ask the Father of us all, the Source of all our knowledge, for special inspiration and guidance during these days of thoughtful deliberation. Certainly that is the enthusiastic wish of your hosts in these halls.
WELCOMING REMARKS by Robert Lado
Dean, Institute of Languages and Linguistics

Dr. Kreidler, Members of the Panels, Participants and Visitors:

I'm very happy to welcome you to the Institute of Languages and Linguistics and to the 16th Annual Round Table Meeting. The Institute was founded in 1949. The first Round Table was held in 1950. There was no monograph published in connection with that first one. The first monograph reported the papers and discussions of the 2nd Round Table, held in 1951. You see, the complication of the numbers began at that time—the 2nd Round Table but the first monograph. That confusion has unfortunately continued to the present. This is the 16th Annual Round Table but our monograph will be Monograph No. 18.

Also, by way of clarification, the name of the Round Table and of the monographs has changed from time to time, from Round Table on Linguistics and Language Study, to Languages and Linguistics, and several other names. It's all the same Round Table. This is a unique contribution of Georgetown University to the development of linguistics in the United States and abroad. It is sponsored by Georgetown, completely supported financially by Georgetown; we have no outside support, but we make it a point not to use it as a sounding-board for our own professors. This is a forum for American and international linguists and teachers of languages. This has been so from the beginning.

One final announcement—a sad one. During the year a great enthusiast of these Round Tables and these monographs, Professor Richard Slade Harrell, died of acute heart failure in Cairo, Egypt, where he was on sabbatical leave. The Institute has decided to name its Arabic Series in his honor. It will be known as the Richard Slade Harrell Arabic Series. Professor Harrell was the editor of the 12th Monograph, with which he took great pains. This was characteristic of Professor Harrell. A group of us at Georgetown have decided to accept small contributions toward the painting of an oil portrait which will hang in the halls of this University in tribute to this remarkable young American scholar who was lost during the year.

You are most welcome. I have the program and handouts and I'm very anxious to hear what is to be presented in this Round Table.
PANEL I

APPROACHES TO

LINGUISTIC ANALYSIS
ON SOME RECURRENT TYPES OF TRANSFORMATIONS

EMMON BACH

University of Texas

In recent years there has been a great increase of interest in language universals. Some idea of the variety of approaches and linguists involved in this interest can be gained by reading through the contributions to the symposium on *Universals of Language* held at Dobbs Ferry in 1961. From the point of view of tagmemics Kenneth Pike has called for and put into practice a search for syntactic universals ("etic" concepts). And programmatic statements about universals have come from the proponents of transformational theory.¹ It is from the latter point of view that I would like to discuss some parallel situations in several different languages in order both to show how universals enter into and are justified by the description of particular languages and to make some suggestions about certain universal syntactic concepts.

I assume as a background this framework: a general theory of language which states what the linguistic theories for individual languages are like, in particular that each such description consists of at least three parts—a syntactic component, a semantic component, a phonological component—; further a statement of the structure of these components and the way in which they operate to give representations of the structure, meaning, and phonological shape of possible utterances on the three levels; an evaluation procedure for selecting the "better" of two equal comprehensive descriptions; a stock of universal concepts for filling in the substance of each such descriptive theory.

There are two kinds of universals in linguistic theory. When we state that linguistic theories for particular languages will have such and such a form, that the rules must obey such and such formal constraints, and so on, we are positing universal features of the structures of individual languages.

¹ Joseph H. Greenberg, ed., *Universals of Language* (Cambridge, Massachusetts, 1963); Kenneth L. Pike, "Dimensions of grammatical constructions" *Lg* 38.221-244 (1962) and elsewhere; Jerrold J. Katz and Paul M. Postal, *An Integrated Theory of Linguistic Descriptions* (Cambridge, Massachusetts, 1964), especially section 5.3.
Such universals have been called "formal universals." They are parallel to statements like "all languages have phonemes and morphemes," but recent linguistic theory goes considerably beyond such statements in the detailed description of the nature of possible linguistic systems.

On the other hand, when we consider the items that enter into the rules for particular languages, we must ask whether there are any universal categories or statements here too. These have been called "substantive universals." What they might be has been clear for some time in phonology. The description of the phonology of every language makes a selection from a stock of universal phonetic concepts and parameters. We do not have to state over and over again for each new language what a velar stop is (if the language has one), but only what is peculiar about velar stops in that language. The currently most widely used set of concepts (in transformational phonologies) is based on the distinctive feature theory of Roman Jakobson. Besides offering a stock of categories from which particular languages choose, it provides a way of stating universal laws about relations among these categories. Thus, if a language has an opposition between vowels and consonants, then the vowels will have the feature of voicing. Exceptions to this law can be stated for the particular languages involved, leaving the typical pattern for general phonological theory. Japanese has voiceless vowels but the feature is completely redundant and predictable at a low level of the phonology (and note that even the particular rule about Japanese makes use of general phonetic concepts). Comanche is reputed to have a true opposition of voiceless and voiced vowels but this is a peculiarity of the language which will not stop us from stating our general law, just as the existence of the platypus and echidna or viviparous snakes does not destroy the usefulness of the categories of mammal and reptile in zoology (or the general statements we make about them).

Until recently it has not been clear just what the substantive universals in syntax might be or on what basis they could be justified. To posit such universals would be to turn the abstract symbols and categories of the syntax into interpreted symbols. When we set out to describe some new language we are usually pretty sure about what things we will call nouns (or substantives, etc.), or verbs, adjectives, and so on, but we have not known

---

2 Katz and Postal, p. 160.
3 Ibid.
4 Morris Halle and his students have done the most in working out phonological theories within this framework. It is interesting that none of the linguists who object to the use of Jakobsonian features has offered an alternative set.
why and have either been very apologetic or have invented all sorts of obscure terms—e.g. "pure relational suffixes" for cases—in order to avoid the charge of glottocentricism. It seems likely that part of this justification will come from semantic theory. I would like to concentrate here, however, on syntactic characteristics that might enable us to define such categories in general linguistic theory.

My discussion will be devoted primarily to the problem of nominal modifiers. In many languages (I should be bold and say "all") there are transformations which operate on two sentences to embed a version of one sentence into the other as a modifier of a "word" which occurs in both of the underlying sentences. In English such transformations yield sentences with relative clauses, attributive adjectives, possessive constructions, and a few other types as illustrated here:

(1) I live in the house.  
(2) Michael lived in the house.  

> I live in the house that Michael lived in.

With the same embedding (matrix) sentence and various second sentences we have:

(1) + (3) The house is big.  > I live in the big house.  
(4) My brother has the house.  > I live in my brother's house.  
(5) The house is by the bridge.  > I live in the house by the bridge.  
(6) The house has a red roof.  > I live in the house with a red roof.

Since we can also have sentences with relative clauses matching each of the sentences with shorter modifying words or phrases—\emph{I live in the house that} 

\footnote{Compare Katz and Postal, \emph{loc. cit.} and \emph{passim}, as well as various statements in the writings of Noam Chomsky, \textit{e.g.}, "Current issues in linguistic theory," in Jerry A. Fodor and Jerrold J. Katz, \textit{edd.}, \emph{The Structure of Language}, p. 82, fn. 28.}

\footnote{A number of extensive revisions in transformational descriptions have been suggested recently, in Katz and Postal (see footnote 1), in Chomsky's lectures at the Linguistic Institute at Indiana University in 1964 (to appear in T. Sebeok, \textit{ed.}, \emph{Current Trends in Linguistics}, III, in an announced book by Chomsky on \emph{Aspects of the Theory of Syntax}, and in Edward S. Klima, "Current developments in generative grammar," to appear in \textit{Kybernetika} I (Prague). The discussion in this paper follows the more familiar form of earlier transformational grammars, since most of the relevant work has been done in that framework. In some details the statements would have to be modified, although I think that the main conclusions will remain unchanged by more recent work. On the other hand, it seems to me that the possibility to state such similarities and differences as those discussed below places an important condition on any suggested revisions of transformational descriptions. If the conclusions about the syntactic definitions of such categories as Noun, Noun-Phrase, Verb, REL, RM are unstatable in the newer revisions of transformational grammars, then this seems to me to constitute a possible argument against such revisions.}
is big, etc.—the question arises whether to relate these two types of modifiers in a direct way, that is, whether to derive the structures underlying the reduced modifiers from already embedded modifying clauses or to treat them separately. From the beginning the former course has been chosen. The reasons can be seen by comparing the two transformations that would be necessary in each analysis for phrases like the house on the corner. With an independent rule we would have roughly:

\[
\begin{align*}
X + \text{Noun} + Y \\
T + \text{Noun}' + \text{Aux} + \text{be} + \text{Loc} \\
\text{where Noun} = \text{Noun}'
\end{align*}
\]

Following the usual course we need only the singular transformation:

\[
X + \text{WH} + \text{Noun} + \text{Aux} + \text{be} + \text{Loc} + Y \Rightarrow X + \text{Loc} + Y
\]

This may not seem like a dramatic savings in simplicity, but the situation is a good deal clearer when the whole battery of such rules is considered, since we can deal with a more general symbol "Pred" and take care of adjectives, appositive noun phrases, and so on by the same rule. Additionally, the problem of getting the correct derived phrase structure is much simpler in the second alternative, since the operation is a simple deletion. (If the recent suggestions to eliminate generalized transformations are adopted, the details of the argument just given will have to be modified but the conclusions remain untouched.)

Let us look next at the general rule for relative clauses in English. It may be given more or less as follows:

\[
\begin{align*}
X + \text{Noun} + Y \\
W + \text{NP} + Z
\end{align*}
\]

where (1) NP = T + Noun' and Noun' = Noun
(2) NP is not "part of" another NP

The last part of the condition is to prevent, for instance,

*He was standing on the bridge that I live in the house by.

Notice first of all that we leave the second occurrence of the noun-phrase in the output of the rule in order to formulate general rules for such different forms as who and which. Further, the item WH has no particular phonological meaning, it might as well be THAT or 236 or RM or any other arbitrary symbol at this point. Finally, notice that there has been a shift of the NP to initial position and that ultimately the second occurrence of the NP will be deleted or replaced with WH by which, etc.³

One further detail may be mentioned. In English we distinguish between restrictive and non-restrictive relative clauses. One difference between them is that the class of sentence adverbs like of course, unfortunately, probably, possibly cannot occur in restrictive clauses. Compare the two sequences:

Dogs, which of course bark, don't bite.
*Dogs that of course bark don't bite.

(or more clearly with of course after bark). Further evidence for this restriction (which has not been studied very much) comes from ambiguous forms like hopefully (which seems to have gone through a recent loan-shift from, presumably, German). The following sentence is ambiguous when standing alone:

The people are hopefully waiting.
Also in a non-restrictive embedded clause:
Send in the people, who are hopefully waiting.
But the sequence is unambiguous in a restrictive clause:
Send in the people who are hopefully waiting.
(I realize of course that with differences in order and intonation the first example can be made unambiguous.)

Summarizing then, the following characteristics of relative clause embedding in English can be listed:

(a) condition of identity of nouns in the embedded and embedding sentences;
(b) condition that the occurrence of the noun phrase in the embedded sentence not be part of another noun phrase;
(c) introduction of a grammatical morpheme which marks the relative clause;
(d) shift of the shared noun to the head of the embedded sentence;
(e) further changes in the embedded sentence, some obligatory, some optional, including formation of various relative pronouns or markers (who, which, that, etc.), deletion of that, reductions of clause, preposing of some adjectives, formation of possessives, etc.;

---

8 This seems to be an instance of a more general restriction that might be imposed on all transformations, namely, that whenever an item "Q" is named in the structural description of a transformation, the proper analysis of a string undergoing the transformation must analyze the string at the "highest" Q possible at that point in the string, cf. N. Chomsky, "The logical basis of linguistic theory" in Preprints of Papers for the Ninth International Congress of Linguists, pp. 520-522.

9 This example is adapted (in English translation) from Wolfgang Motsch, Syntax des deutschen Adjektivs, Studia Grammatica III (Berlin, 1964), p. 68.
(f) restrictions on the occurrence of sentence adverbs and the like (including apparently some restrictions on modal auxiliaries—*dogs that may bark don’t bite*) in some kinds of relative clauses.

If we look at a closely related language like German, we find not surprisingly that many of the details in the rules for embedding relative clauses and the various constructions derived from them are the same. The differences result in part from details of the obligatory machinery of each language (e.g. cases and gender in German), partly from different options available (e.g. preposing of a wider variety of modifiers in German). I shall not dwell on the German rules except to point out that in both languages it is useful to posit a dummy element ("REL") which occurs in the expansion of the noun phrase in the PS and that there is some question as to whether this item (which is connected with the occurrence of the articles) should be positioned before or after the noun. (Once again, if we follow the recent suggestions of Chomsky or Klima, the item "REL" would be replaced by a direct introduction of "S" possibly with a relative marker in noun phrases in a cyclically ordered set of PS rules.)

Let us look instead at some sentences in Japanese. The following sentences parallel (as closely as possible) the first set of English sentences quoted before (I use plain forms to simplify the discussion):

1. *boku ga uti ni sumu*
2. *Taroo ga uti ni sunda*

(1) + (3) *uti ga ookii*  > *boku wa ookii uti ni sumu*
(4) *ani ni wa uti ga aru*  > *boku wa ani no uti ni sumu*
(5) *uti wa hasi no soba ni aru*  > *boku wa hasi no soba no uti ni sumu*
(6) *uti ni wa akai yane ga aru*  > *boku wa akai yane no uti ni sumu*
(6') *uti wa yane ga akai*  > *boku wa yane no akai uti ni sumu*

Just as in English or German the description of Japanese syntax can be simplified if we posit a rule introducing such de-sentential modifiers ("relative clauses") quite generally and then give additional rules to yield the more specialized constructions illustrated above (and others). As a first approximation we might have something like this:

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10 I am grateful to Mrs. Akiko Ueda for checking and discussing with me my Japanese examples. I make no attempt here to discuss the suggested analyses in the light of the already rather extensive literature on the transformational analysis of Japanese.
ON SOME RECURRENT TYPES OF TRANSFORMATIONS

There are several things to notice about this rule. First, it is very close to the rule for English given above, much closer than would be the individual rules for the special constructions derivable from its transforms. Second, the conditions stated are almost identical (as a matter of fact the first restriction as stated here will still be correct for English). Just as the second condition on the English rule was necessary, so also here to prevent, for instance, a derivation like the following:

\[ \text{kare ga hasi no ue ni tatta 'he was standing on the bridge'} \]
\[ \text{boku ga hasi no soba no uti ni sumu 'I live in the house by the bridge'} \]
\[ \text{*kare wa boku no soba no uti ni sumu hasi no ue ni tatta 'he was standing on the bridge that I live in the house by'} \]

And again we find certain restrictions (not dealt with further here) on the carrying-over of "sentence adverbs". The result of carrying over sikasi 'however' in the embedded sentence yields ungrammatical strings:

\[ \text{*boku wa ano sikasi Taroo no suna uti ni sumu.} \]

What I want to suggest next is that we deliberately exploit the similarities in the two general rules and state a rule which will have exactly the same form in the two grammars for Japanese and English. Assuming the amendment to the phrase structure mentioned above (i.e. the introduction of an optional item "REL" occurring in noun phrases) and the use of a dummy symbol "md" (with "REL → md" in the phrase structure) which provides the actual substituend in the rule (so that the substituted second sentence takes on the analysis "REL")\(^{11}\) we may state a general rule as follows:

\[
\begin{align*}
\text{T 1. Relative Clause Embedding} \\
\text{SD: } & S_1: X + \text{Noun} + \text{md} + Y \\
& S_2: W + \text{NP} + Z \\
\text{SC: } & 3 > 5 + 6 + 7 \text{ in } S_1 \\
\text{where (1) } & 6 \text{ contains 2} \\
\text{(2) } & 6 \text{ is not part of another NP}
\end{align*}
\]

The "matrix dummy" *md* will be dominated by the universal symbol "REL" so that the general rule for substitution transformations will have the desired effect of giving an analysis of the substituted sentence as a "REL" (or if this is not possible an additional condition may be stated to the effect that *md* is dominated by REL). Now we can extract this rule from the grammars of the two languages and state it as a universal transformation which is implied by the use of the symbol "REL" in any particular grammar and does not need to be stated for each language separately.

Before continuing let me point out several consequences of this attempt at stating a universal transformation for relative clauses. First, such a rule can obviously not be stated unless the categories mentioned in the structure index occur in the phrase structure rules of the particular languages for which it is claimed to hold. That is to say, the postulation of such universal rules has a direct bearing on the search for syntactic definitions of such items as "noun" or "noun-phrase". Second, I mentioned before that there was some question in describing English and German as to whether to position the item "REL" before or after the noun to which it is attached. It is clear that the rule just given must be supplemented by a special rule for Japanese which will reposition the reflex of the "relative clause" before the noun. If on the other hand we position "REL" before the noun, we will have to have a special rule for English and German. It would follow from the intent of my remarks that decisions about the particular details of our analysis for one or another language will be made in part on the basis of what we find out about many other languages. In other words, far from trying to describe each language "in terms of its own structure alone", we must try to describe each language in terms of the structure of all other languages. Third, we can see how universal implications in the spirit of Greenberg will find a place in general linguistic theory. Suppose, for example, that it turns out that most languages with the basic order Subject-Object-Verb (like Japanese) also have preposed desentential nominal

---

12 This rule provides an example of the sort of empirical evidence that may be brought to bear on questions about the general rules for derived constituent structure. From this example and similar rules one could derive arguments about whether or not a substitution for an item "Q" in the SD should replace Q in the derived P-marker and take on its "higher" analysis, or whether it should replace what is dominated by "Q" and thus receive the analysis "Q" in the derived P-marker. If the latter course is followed then the SD could use "Rel" in place of the item "md" and, whether or not "md" might occur after a "Noun" when "md" is derived from other sources (e.g. "COMP"), the rule would apply properly only to those "md" derived from "REL" and still remain open to the application of rules like T5 below.
Then we do not have to state the rule shifting "REL" to a position before the noun for Japanese separately but can state in our general theory that this rule is predictable from the basic order of Japanese sentences.

By applying the rule to both English and Japanese sentences we have produced strings like the following:

\[ I + \text{Pres} + \text{live} + \text{in} + \text{the} + \text{house} + \]
\[ \text{RM} + \text{Michael} + \text{Past} + \text{live} + \text{in} + \text{the} + \text{house} \]

or

\[ \text{boku} + \text{ga} + \text{uti} + \text{RM} + \text{Taroo} + \text{ga} + \text{uti} + \text{ni} + \text{sum} + \text{ta} + \text{ni} + \text{sum} + \text{u} \]

Let us next look at the steps that might be followed in reaching well-formed sentences in the two languages and at the same time parenthetically consider what happens in a few other languages if we assume the operation of the same general rule in them. Before beginning, however, I would like to point out both the syntactic and semantic relation between the strings just mentioned and the results of conjunction transformations. It would seem fruitful to pursue the question whether such structures as embedded relative clauses in English might not be derived from conjoined sentences to explain sets of paraphrases like the following:

I live in the house and the house is by the bridge.
I live in the house and it is by the bridge.
I live in the house that is by the bridge.
I live in the house by the bridge.

Consider first the relation between the structures discussed and pronouns. Suppose we give as a first rule for deriving relative clause and related constructions a rule which marks the repeated noun for pronominalization:

\[ X + \text{Noun} + \text{RM} + Y + \text{NP} + Z \rightarrow X + \text{Noun} + \text{RM} + Y + \text{PRO} + \text{NP} + Z \]

where NP = P + Noun' + Q and Noun = Noun'

\[ Y \neq W + \text{PRO} \quad \text{(and further restrictive conditions on Y)} \]

Now the interesting thing about this is that except for the presence of "RM" it is exactly like a more general rule that might be formulated for pronominalizations (I mean here real substitution forms). In other words, we

\[ ^{13} \text{See Joseph H. Greenberg, "Some universals of grammar" in } \textit{Universals of Language}, \text{ pp. 48-90.} \]
do not have to state a special rule for this step but merely add a condition to the general rule:

**T2 Pronominalization**

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<thead>
<tr>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td>SD: X+Noun+Y+NP+Z</td>
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<td>SC: 4→PRO+4</td>
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<td>where 4 contains 2; 4 is not part of another NP; and Y=W+PRO; optional except where Y contains RM.</td>
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</tbody>
</table>

As a matter of fact if we want to characterize sentences like “I went down to the sea and the sea was black” as special, we can state a more general condition based on whether or not Y contains a sentence boundary. Now I would submit that this rule is valid both for English and Japanese. In English, the rule marks the shared noun for a shift to initial position in relative clauses. If this shift is considered optional for English we will generate sentences like “I was living in the house that Michael was living in it.” Such sentences occur fairly often especially if the embedded clause is long and complicated. (I have heard one of the participants at this Round Table say something like this: “I was working on 61 languages that I was describing the sound structures of them.”) Moreover, we have in some special varieties of English—e.g. mathematical writing—a relative marker *such that* which goes with clauses of precisely this form. Compare also the semi-grammatical “He was standing on the bridge that I was living in the house by it.” As for Japanese, I would argue that the ordinary kind of pronominalization is simply a deletion of the pronominalized noun-phrase. But we have seen that one of the steps in deriving “relatives” in Japanese is precisely such a deletion. I do not know enough about different languages to adduce many parallels here, but (if I have the facts straight) Malay seems to have at least one such modifying structure which would result directly from the rules given so far with appropriate extensions: RM is *yang* and the pronominalized form yields (obligatorily in some sentences) a substitute *nya* which occupies the position held before by the shared noun.

The next rule is more restricted. In other words, it has to be referred to at least in the description of individual languages (unless it can be predicted from some other features of the languages which use it).

**T3. Relative Pronoun Attraction**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD: X+Noun+RM+Y (Prep) PRO+NP+Z</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC: (a) 4+5+6+7&gt;5+6+7+4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(English) (b) 4+5+6+7&gt;6+7+4+5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>where 7 contains 2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The rule will hold for German and English with structural change (a). For English we may add (b) to provide for the possibility of both the house that I live in and the house in which I live.

In order to account for English sentences with the relative particle that we may next state a rule which has the effect of deleting the marked noun-phrase occurring immediately after the relative marker RM:

\[ T4. \text{Deletion of Relative Noun Phrase} \]
\[
1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \\
SD: \ X + \text{Noun} + \text{RM} + \text{PRO} + \text{NP} + Y \\
SC: \text{delete} \ 4 + 5 \\
delete \ 5 \text{ contains 2.}
\]

This is an optional rule for English. It will be correctly blocked when a preposition intervenes between RM and PRO (since we have no phrases like *the house in that I live* or *the house that in I live*). With no application of this rule we still have the noun for correct choice of who and which, etc. The rule will be obligatory for those languages like Norwegian that utilize an invariable relative particle (som). If the analysis of deletion as a general method of pronominalization in Japanese turns out to be untenable, then this rule would also hold obligatorily for Japanese.

Next we may state a special rule for Japanese which preposes the relative clause construction. It can be very simply given as follows:

\[ T5. \text{Position of Relative Clause:} \]
\[
1 \quad 2 \quad 3 \quad 4 \\
SD: \ X + \text{Noun} + \text{Rel} + Y \\
SC: \ 2 + 3 \rightarrow 3 + 2 \\
\]

Rules of this sort hold for many languages (e.g. Turkish). As mentioned above, it may not be necessary to state such a rule for individual languages. Instead, it may turn out that general linguistic theory would provide a "law" of the form:

If NP NP (NP) Verb, then T5.

Notice, however, that such a universal implication will have a direct bearing on the details of order in setting up PS rules for individual languages. It is certainly premature to draw any conclusions at this point, but such a rule might show that the basic order of verb-end clauses which has been suggested for Modern German should be rejected.\(^{14}\) Once again, particular

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consequences of this preposing must be stated for Japanese (conclusive forms on verbs and adjectives, etc.). Even though this rule was made to take care of Japanese, by stating proper conditions and ordering the rule in our English grammar the same rule will account for the placing of attributive adjectives before the noun.

Our next rule deletes the relative marker RM. This rule is optional for English (and must be suitably restricted): the man I saw . . .

T6. Deletion of Relative Marker

\[ SD: \ X + RM + Y \]
\[ SC: \ delete \ 2 \]

The rule must follow all the rules for which we still need RM (for who, whose, which, whom). I think that it is better to state the rule in terms of the general symbol RM than in terms of that for several reasons. Not only is the rule still completely language-independent in its structural description, but if we state the rule in terms of the particular morpheme that, we must ensure by a more complicated SD that it is only that that occurs in that-clauses that gets deleted.

Finally, in each grammar we must add rules like:

\[ RM \rightarrow \text{that} \quad \text{(English)} \]
\[ RM \rightarrow \text{som} \quad \text{(Norwegian)} \]

and (unless we assume the previous RM deletion has applied obligatorily) the rule giving RM a null phonetic representation in languages like Japanese.

Let me summarize what we have done so far in the form of a chart:

<table>
<thead>
<tr>
<th>T1</th>
<th>embedding of relative clause (or comparable blocking T in new style grammars)</th>
<th>English obligatory</th>
<th>Japanese obligatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>pronominalization</td>
<td>obligatory (if RM)</td>
<td>obligatory (if RM)</td>
</tr>
<tr>
<td>T3</td>
<td>relative pronoun attraction</td>
<td>obligatory</td>
<td>(possibly obligatory)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(in some styles optional)</td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>deletion of relative NP</td>
<td>optional</td>
<td>(possibly obligatory)</td>
</tr>
</tbody>
</table>
ON SOME RECURRENT TYPES OF TRANSFORMATIONS 15

T5  preposing of REL  (obligatory if  obligatory
     REL = Adj.
     otherwise not
     possible)
T6  deletion of RM  optional  obligatory

Finally, for the individual languages we need phonological rules and further transformations, some interspersed among the above.

Now I think it is interesting to look at a totally unrelated language and one that is moreover rather different in general structure from English and Japanese, namely Swahili.¹⁵ Let us assume that we use items like “Noun,” “NP,” “Verb” and so on in our Swahili grammar. If we take two sentences that fit the structural description of T1, say,

nilimwona mtu REL  ‘I saw the man’ (plus REL)
mtu anaendesha shule  ‘the man runs the school’

and run them through rules T1 and T2 (both obligatory) we will obtain the following strings (I leave irrelevant parts unsegmented):

(T1) nilimwona mtu + RM + m + tu + a + na + endesh + a + shule
(T2) nilimwona mtu + RM + PRO + m + tu + a + na + endesh + a + shule

T3 will apply vacuously since the NP is already positioned next to its RM. If however we take another second sentence with mtu as object, say:

watoto walimwona mtu  ‘the children saw the man’

we will obtain by rules T1, T2, and T3 the following:

nilimwona mtu + RM + PRO + m + tu + wa + toto + walimwona

(Actually, these strings are a compromise between the final forms and the more abstract representations best suited to a description of Swahili syntax. For instance, there is good reason to consider the class prefix m on mtu as represented by “Sg + wa” at this point of the grammar.)

These strings have been obtained by using rules set up to account for Japanese and English. There is good justification for them both in English and Japanese separately and in the attempt to show their similarities. Now I think that it is rather remarkable that these strings seem to be in such good

¹⁵ I am indebted to my colleague Edgard G. C. Polomé, for checking my statements about Swahili, and discussing them with me. My information about the language has been drawn primarily from his forthcoming Swahili Handbook and from E. W. Stevick, J. G. Mlela, and F. N. Njenga, Swahili: Basic Course (Washington, D.C., 1963).
shape for going on to describe Swahili relative constructions. We can accomplish the further description of such constructions by one special rule and a number of obligatory adjustments (that would have to be stated anyway, or incorporated into much more complicated individual rules). The one special rule is this:

**T7. Obligatory Verb Shift**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>X+RM+Y+Aux+Verb+Z</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SC: 2 + 3 → 3 + 2

with suitable restrictions on Y (does not contain RM?)

This rule will give for our two examples:

\[
\text{nilimwona mtu} + \text{RM} + a + \text{na} + \text{endesh} + a + \text{PRO} + \text{m} + \text{tu} + \text{shule}
\]

\[
\text{nilimwona mtu} + \text{RM} + \text{wa} + \text{li} + \text{mu} + \text{on} + a + \text{PRO} + \text{m} + \text{tu} + \text{wa} + \text{toto}
\]

The further rules necessary are suggested by these:

\[
\text{PRO} + \text{Pre} + \text{Noun} \rightarrow \text{Pre} + o
\]

(this yields the bound forms of the substitutive pronoun, as well as the "relative affix" forms)

\[
\text{Tns (Object-Marker) Verb} + \text{Pre} + o \rightarrow \text{Tns} + \text{Pre} + o (\text{Object-Marker}) \text{ Verb}
\]

where \( \text{Tns} = \text{li}, \text{na}, \ldots \)

Rules for the reflexes of the prefixes (or class markers) with various forms, including in particular

\[
\text{Sg} \begin{cases} \text{wa} \\ \text{1st-p} \\ \text{2nd-p} \end{cases} \rightarrow \text{ye in env. RM+SM+Tns((OM) Verb)}
\]

For the disposal of RM we can revert to our original list (T6) for a final deletion rule. This rule must be preceded by those rules which introduce the form *amba* optionally and obligatorily in various situations. If *amba* (with its proper affixes) is made a direct reflex of *RM*, then the final rule will be a deletion of all remaining *RM*. We thus obtain finally for our two examples:

\[
\text{nilimwona mtu anayeendesha shule}
\]

'\text{I saw the man who runs the school}'

\[
\text{nilimwona mtu waliyemwona watoto}
\]

'\text{I saw the man that the children saw}'
Notice that this sequence of rules provides just the order needed. In the included clauses object noun phrases remain in their usual place following the noun, but subject noun phrases are shifted to postverbal position (or rather the shift of verb—necessary anyhow—results in this order).

Now as a matter of fact, the last sentence (with postposed subject) is a rather bookish construction. Suppose we delete (or mark as optional for a certain style) T7, the only rule which has to be stated specially for Swahili just for this construction. Then with all other rules remaining and a rule changing RM into *amba* (needed in any case for some constructions in any style) we will have the more usual form:

\[ \text{nilimwona ūtu ambaye watoto walimwona} \]

I do not want to insist too much on the details of these analyses. I do want to underline, however, some general points.

1. In working out rules for particular languages simplicity is often achieved by breaking down a number of complicated transformations into component steps. In this way a number of superficially disparate constructions turn out to be related as particular selections from the series of component transformations.

2. Various unrelated and related languages seem to exhibit the same component transformations. The differences appear in the particular selections made, in the obligatory or optional character of the transformations, and in further special rules. The situation is exactly parallel to the situation in phonology, where languages differ mainly in the selection and low-level physical realization of phonological oppositions taken from a universal stock.

3. By making reference to such universal transformations we can simplify the description of individual languages and at the same time build a general substantive theory of syntax. In order to do this we must use the same designations for various categories in different languages. Or—turning that statement around—because of the postulation of the universal transformations we can give some syntactic meaning to such terms as "noun," "noun phrase," "relative clause," "verb," and the like. It is important to disengage this search for universal syntactic concepts from the practical problem of choosing appropriate terminology. Linguists have reacted in the past to the use of a Latin or Indo-European terminology for describing languages of radically different structures. But I would submit that the particular words we choose are less important than the way we use and define them. A study of "the genitive in all languages" is silly only if we mean by "genitive" something specifically restricted to, say, Latin, or German. Once we have pinned down the concept in a suitably general way,
it is merely an interesting etymological fact that "genitive" comes from the Latin grammarians. As linguists we should be tolerant in etymological matters. "Paradigms" such as those listing the six "cases" of English and used as occasions for merriment in the linguistic in-group are to be rejected not because they attempt to list the reflexes of certain functions in a general syntactic framework taken from outside English, but because the general framework is wrong. Similarly, the term "relative clause" which I have used here to designate certain structures in three unrelated languages may be objected to as having the wrong connotations, and if desired may be replaced by a clumsier locution like "desentential nominal modifier." But this is, I think, a matter of convenience or rhetoric and after all not very important.

(4) Finally, just as the universal features of phonological systems are based on the common characteristics of sound systems as systems of oppositions realized by a vocal apparatus essentially the same in all humans, so also widespread or universal syntactic (and semantic) characteristics of different languages result from the universal needs of human speech communities. It is often said that all languages are equally complete. Every language provides a means to capture in linguistic symbols any aspect of human experience whenever it becomes important enough to talk about it. The devices discussed above presumably have their counterparts in every language since their function is essentially to provide a new ad hoc expression for any person, place, or thing, experience, process, function or feeling that a human being may want to name.

17 Robert B. Lees, op. cit., pp. xvii f.
The question(s) I want to speak about here I could state in the following way: What layers in language should we distinguish, and what methods of linguistic analysis can we develop for each of these layers, especially on the content side, the meaning side? For this, the title, as it appears on the program, "The Relation Between Inner and Outer Form" is a very exciting, but also a dangerous one. First: there is not just one relation, but there are many and various relations. Secondly: "Inner Form" is not yet a clear cut concept, but rather an indeterminate one. Thus I would not start by analyzing this concept, but rather by taking a short text and making some experiments on it, to serve as an example of what I mean.

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed, That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness.

The text, I think, is very well known to every American. It is not a contemporary text in the sense that it was written today, but in the sense that everyone today reads it and understands it, and as an American identifies himself with its thoughts and feelings. From American critics of my book "The inner form of German" you know perhaps that I have some natural preference for texts of a classical nature. But in order to avoid misunderstandings let me stress again that here I am not dealing with this text as something inherited from 1776 but as a text to be understood by every American in 1965. Thus I am not considering the text as a historical docu-
ment, but I am considering it rather as a means to test the linguistic habits of those who read the text in our time.

Consider a child who is asked to read for example the following clause:

. . . . That to secure these rights, Governments are instituted among Men.

... Suppose that this child knows what is meant by "government," and that from the preceding parts of the text he knows what is meant by "rights"; but he does not understand what is meant here by "secure." What will a teacher do in order to help this child? He will substitute another word for "secure," perhaps: "... to guarantee these rights ..." Perhaps he will explain further by expanding it to: "... to make certain that everyone has these rights and that he preserves them. . . .".

These paraphrases are nothing but a kind of substitution test, and by using such tests we are able to assure ourselves whether or not a reader understands the sense of what he is reading. What he should understand, what the text means, this is what I call "Das Gemeinte."

What a text means

What an utterance (spoken or written) calls forth in the hearer's mind (thoughts, feelings, emotions, etc.)

das Gemeinte

I can say even more: we will be able to predict how an educated American with sufficient reflexion would understand this phrase, and not only an educated American, but anyone who has learnt enough English and has enough historical background and who is asked to read this part of the Declaration of Independence.

But now we must answer the following question: how is it possible that practically everyone will understand this phrase in the same way? There must be a very great range of concepts, of mental habits, of meaningful units and structures which must be common to all readers who understand this phrase and this entire text in the same way. These common mental habits—these habits which must be shared by the linguist and by all his informants, in order to make even possible the understanding we have observed and we can observe, these are what I call the semantic structures and units of the language, in German "die geltenden Inhalte einer Sprache." Here I will use a word derived from the Greek, "nomos," (=law, norm for a community) and because we must always distinguish the single units or items
and the entire structures into which they can enter, we should have a *nomo-lexicon* and a *nomo-syntax*.

The nomo-syntax has to deal with the semantic structures, in German "Satzbaupläne," i.e. with the patterns underlying the formulation of the concrete phrases, clauses and sentences of a language. It must explain the different structural meaning of clauses that seem superficially to be identical, e.g. the pair given by Chomsky:¹

<table>
<thead>
<tr>
<th>John is easy to please</th>
<th>John is eager to please</th>
</tr>
</thead>
<tbody>
<tr>
<td>hard</td>
<td>anxious</td>
</tr>
<tr>
<td>difficult</td>
<td>zealous</td>
</tr>
</tbody>
</table>

The nomolexicon has to deal with all the single items which are able to enter into the slots of these patterns; these items can consist of one word or of several words. So "anxious" in "he is anxious" has not exactly the same meaning as in "he is anxious to please."

We have then:

<table>
<thead>
<tr>
<th>What a text means</th>
</tr>
</thead>
<tbody>
<tr>
<td>What an utterance (spoken or written) calls forth in the hearer’s (reader’s) mind (thoughts, feelings, emotions etc.)</td>
</tr>
</tbody>
</table>

The *semantic structures and units* of a language (they must have the same semantic value for all members of the linguistic community)

As an additional remark: these semantic units and structures include the so called "connotational" as well as the "denotational" aspects—in so far as the connotational aspects are common to all speakers and not peculiar to some individuals. This difference between connotational and denotational, from my point of view, is *not* a linguistic one, but as extra-linguistic one; it comes from a merely logical approach to language—and for me, language is more than logic, and if reduced to mere logic, it loses something very important.

But now we must go one step further. Is it possible to make some

changes or substitutions in the text without causing any change in the meaning as a whole? I think it is possible:

... deriving their just powers from the consent of the governed of those who are governed

... whenever any form of government becomes destructive of these ends turns out to be destructive of these ends

Through these experiments we come to perceive more formal linguistic units and structures. A closer inspection shows that they are not purely formal, they have some aspects of content, some aspects of meaning too but, nevertheless, they are not identical with the real semantic units and structures; sometimes, the very elements that make up a total form may suggest aspects of meaning over and beyond the meaning of the form as a unit. These aspects of meaning must be clearly distinguished from the actual meaning, the meaning of the form as a whole.

An example might help. A "blackboard" is simply a thing to write on with chalk in a classroom. If one stops to consider the elements of the word "black" and "board," he may misunderstand. A blackboard need not be black.

Here too, I use words derived from Greek, and I speak of the Morpho-lexicon and the Morpho-syntax.

In the morpho-syntax, the two clauses "John is easy to please" and "John is eager to please" are identical. But in the nomo-syntax, there is a difference (a structural difference, over and beyond the lexical differences of "easy, hard, difficult" vs. "eager, anxious, zealous"). To say it in Chomsky's words: morpho-syntax=the superficial constituent structure; nomosyntax=the deeper syntactic features.

So we have:

What a text means

What an utterance (spoken or written) calls forth in the hearer's (reader's) mind (thoughts, feelings, emotions etc.)

The semantic structures and units of a language (they must have the same semantic value for all members of the linguistic community)
the more formal structures and units of the language
dienende Strukturen und Inhalte
Morphosyntax, Morpholexicon
(here there can exist subsemantic phenomena, and these subsemantic phenomena can differ from one speaker to another without altering the unit of the language and the mutual understanding)

These two, morpholexicon and morphosyntax, we find first when we approach language as structural linguists, as empirical structural linguists, I would say. What I have done in my books Die innere Form des Deutschen 2 and Der deutsche Satz 3 is a morphosyntax of the German language, arrived at by the use of my three tests (Klangproben or sound tests, reading tests; Verschiebeproben or rearrangement tests; Ersatzproben or substitution tests). The nomosyntax and the nomolexicon, then, are to be discovered through many subsequent experiments, by using refined substitution tests and transformation tests; these tests must start from a text, first from a very short one, and they must lead to a complete analysis of this text, including a certain amount of literary criticism. To do that, the researcher should be a member of this linguistic community—in other words, the work should be done for each language by a researcher who is at the same time a trained linguist and a native speaker having an interest in literature. But this is a work we are just beginning to do in Germany. In the brief theoretical survey given here, I must just go one step further in the direction of Outer Form. Consider the following pairs:

<table>
<thead>
<tr>
<th>we hold</th>
<th>we are</th>
<th>this right</th>
<th>this man</th>
</tr>
</thead>
<tbody>
<tr>
<td>I hold</td>
<td>I ...</td>
<td>these rights</td>
<td>these ...</td>
</tr>
</tbody>
</table>

There are two different shapes of phonemic change, on each side, but there is only one difference in grammatical category, in structural meaning on each side: singular vs. plural. How one difference of lexical or syntactical category is signalled by two or more differences in phonemic shapes, that is not a part of what I call morpholexicon or morphosyntax, nor of course of nomo-lexicon or nomo-syntax. This belongs to the third layer we must distinguish. You could speak of it as of the “allo-layer,” the layer of the allomorphs. In German, here too I would use a newly coined term, Phonomorphie; in English I could use the term “Phonomorphology.”

Now we would have:

What a text means

What an utterance (spoken or written) calls forth in the hearer's (reader's) mind (thoughts, feelings, emotions etc.)

The *semantic structures and units* of a language (they must have the same semantic values for all members of the linguistic community)

The *more formal* structures and units of the language (here there can exist *subsemantic* phenomena, and these subsemantic phenomena can differ from one speaker to the other without altering the unity of the language and the mutual understanding)

The *different phonemic shapes* of the units of the morpholexicon and of the signals of the morphosyntax

Just one example for all three layers:

The Latin genitive can be formed by -i, -ae, -is, -us:

domini—feminae—hominis—senatūs;

these are differences of the *phonomorphology*.

Latin has six cases: nominative, genitive, dative, accusative, ablative, vocative:

dominus domini domino dominum domino domine
femina feminae feminae feminam femina femina
homo hominis homini hominem homine homo
senatus senatus senatui senatum senatu senatus

These are differences of the *morphosyntax*.

In Latin there are differences between genetivus subjectivus and genetivus objectivus:
THE RELATION BETWEEN INNER AND OUTER FORM

25

amor patris \{ the love a father has (for his children) \\
the love a father receives (from his children) \}

These are differences of the nomosyntax.

But let us return to phonemics. With the phonomorphology we have not exhausted the phonemic shapes. I would put to one side those of them which do not belong to single words or mere morphemes, but to whole phrases, clauses or sentences, what you call "suprasegmental phonemes," especially the shapes of pitch and stress. These suprasegmental phonemes belong, as I think, directly to the nomosyntax; and it is very difficult to decide, at least for the German language, to what extent these shapes are fixed ones, belonging to the nomosyntax, and to what extent they are free to carry directly (not by means of word meanings) some individual expression of the feelings and of the state of mind of the speaker. In this case, evidently, they do not belong to language at all, but to speech (Saussure: Parole). So, in our survey, I would write them here:

What a text means

| das Gemeinte |
|------------------|------------------|
| What an utterance (spoken or written) calls forth in the hearer's (reader's) mind (thoughts, feelings, emotions etc.) |

| The semantic structures and units of a language (they must have the same semantic values for all members of the linguistic community) |
| geltende Strukturen und Inhalte |
| Nomosyntax, Nomolexicon |

| The more formal structures and units of the language (here there can exist subsemantic phenomena, and these subsemantic phenomena can differ from one speaker to the other without altering the unity of the language and the mutual understanding) |
| dienende Strukturen und Inhalte |
| Morphosyntax, Morpholexicon |

| The different phonemic shapes of the units of the morpholexicon and of the signals of the morphosyntax |
| Wortkörper aller Art Phonomorphie |
| (phonomorphology) |
These are the three layers I think we must distinguish clearly when working on language. There are two on the content side, not only one, as classical Saussurean theory would suggest. All three, phonomorphology, morphosyntax and morpholexicon, nomosyntax and nomolexicon belong to language as a social code. They must be kept distinct from the fourth, the actual speech, the parole of Saussure. And there is one more difficulty I must stress: there is much interaction between the nomo-layer and the morpho-layer. The two may even become identical sometimes—or better: sometimes there may be no need to distinguish them. But we never know if at a given point of a text to be analyzed there is identity of these to layers or not, and we cannot predict it, we must test it carefully. This leads me to my final remark: all the theoretical framework I have sketched here is not a system developed by logical deduction. It is a working hypothesis to serve me as a means in my work of analysis, and its justification is mainly in the concrete results of text analysis such as I have done up to this time and hope to do in the future.

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THE NATURE OF GENERAL PHONETIC THEORIES

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There has been some discussion recently about the general theory of grammar, the categories which are involved, and their relations with one another. The phoneticians have taken little part in these discussions; and, in one sense, there are no theories of phonetics. The International Phonetic Association no longer presses the notion 'one sound, one symbol' (it had never formally defined what was meant by 'one sound'); and one of the principal adherents to the Distinctive Feature theory (Jakobson, Fant and Halle, 1951) has recently (Halle 1964a) been emphasizing the classificatory role of the features, rather than their descriptive power. But this lack of a general theory of phonetics does not negate the fact that the main business of a phonetician is to provide ways of relating linguistic descriptions with the observable phenomena of speech. We would undoubtedly like to be able to interpret our linguistic descriptions in a systematic way, ideally one that could be formalized in a set of rules. Thus we might want to have a rule:

\[ [\text{t}h] \rightarrow \text{voiceless aspirated alveolar plosive} \]

which would mean rewrite, or interpret, the complex symbol \([\text{t}h]\) as consisting of the terms on the right of the arrow, where terms refer to specific, identifiable properties of sounds. The restrictions limiting the formal relations which may occur within the rules, together with all the permitted terms and their identities, constitute the general theory of phonetics. The particular set of rules which is applicable to a given language can be called part of the linguistic theory for the description of that language.

Linguists appear to disagree over the place in the description of a language at which it is appropriate to relate linguistic units to observable phenomena. Some linguists follow Firth (1951) in considering that the phonological description of a language should reflect a hierarchical structure in which each unit, except the smallest, is composed of an integral num-
ber of the units of lower rank. Thus, in describing English, Halliday (1963) has said that there are tone groups, which are composed of feet (stress groups), which are composed of syllables, which are composed of phonemes. Linguists of this school emphasize the fact that the larger units have directly observable correlates in the actual sounds. In their view each phonological unit is a theoretical construct which has at least two kinds of relations: the one with some observable properties of sound; and the other (which may be complex, and could be further analyzed) with the other units in the phonological hierarchy. These relations may be represented in a diagram as in Figure 1. Note that the items in the right hand column have no relation one with another. What matters for this theory is that there is some specific correlate in substance for each formal unit; but it is quite possible for the correlates of different units to involve different arrangements of the same physical events. The items on the left hand side, however, form a hierarchical structure so that a particular utterance may be partially represented by a tree, as shown in Figure 2. This tree designates an utterance in Igbira, a language of Northern Nigeria; some of the relevant phonology is given in Ladefoged (1964a). English was not used as the exemplifying language partly because this kind of representation would have involved the discussion of too many points of English phonology which are irrelevant to the theme of this paper, and partly because the use of a language such as Igbira demonstrates that in this phonological theory the formal units need not be the same as those required for English, which are as listed in Figure 1.

It follows from what we have said that the tree itself depicts only the

<table>
<thead>
<tr>
<th>Formal linguistic units</th>
<th>Possible physical exponents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone group</td>
<td>pitch pattern</td>
</tr>
<tr>
<td>Foot (stress group)</td>
<td>subglottal pressure pattern</td>
</tr>
<tr>
<td>Syllable</td>
<td>certain articulatory timing relations</td>
</tr>
<tr>
<td>Phoneme</td>
<td>articulatory categories</td>
</tr>
</tbody>
</table>

**Figure 1**

The relations between the phonological units of English and their exponents.
formal relations between units, and cannot show how the units are related to their physical exponents. The tree can be extended as indicated by the dashed lines at the bottom, so that, after the formal relations between the higher units have been shown, the smallest units may be linked with observable events. But an extension of this kind not only leaves out of account the links which this school continually emphasizes between the higher phonological units and their exponents, but also confuses the situation by not making clear whether these added items are formal units of a lower rank (as would seem to be the case for Halle's distinctive features viewed as a classificatory matrix) or exponents of the phonemes (which would seem to be the case for the Jakobson-Fant-Halle distinctive features, viewed as a descriptive matrix).

It could be largely irrelevant whether we hold to a Firthian view of phonology, or to one of the more common American views. But most linguists in the United States appear to disregard the possibility of a hierarchical arrangement of phonological units. They may, in describing a language such as English, abstract the intonation component, but all the other phonological features are represented by a single sequence of symbols, so that the representation of an utterance is not, from the phonological point of view, a tree structure, but (in Firth's terminology) a number of monosystemic marks arranged like beads on a string. But it should be noted that the symbols in this form of linguistic description need not be all of the same order; some may be segmental phonemes, and others junctures of some kind. So the possibility of a hierarchical structure may be implied. Or we may put this difference in viewpoints another way, and note that any
hierarchical structure such as that shown in Figure 2 can be presented in terms of a linear sequence of symbols by writing appropriate brackets as shown in Figure 3a; these brackets may then be considered to be an alternative way of writing the junctures shown in Figure 3b. In many linguistic descriptions the juncture marks may not give as much information about the utterance as those in Figure 3b; but a terminal string with sufficient juncture marks could always be generated by a transformational-generative grammar. This would then be in accord with the formalization of the link between linguistic units and actual sounds required by the Firthian notion developed by Halliday in which a whole phonological tree rather than a terminal string is directly related to the sounds of an utterance.

The descriptive statements with which we are concerned will show even more information than the representations in Figures 2 and 3. They will contain not only the patterning of the higher phonological units and the phonemes, but also the subphonemic patterning, which we may consider for the moment in terms of the arrangement of allophones. We will want our phonetic rewrite rules to account for the difference between, for example, the [1] sounds in the English words leaf and feel which is certainly part of the sound pattern of English. But at this point we should be careful to distinguish between two kinds of allophones. Speech is a dynamic process and cannot be regarded simply as a succession of discrete events. Nevertheless all linguistic descriptions must consist of a sequence of items. In a very detailed transcription we might try to account for the continuous nature of speech by showing allophones which reflect the influence of the adjacent segments. For example, we could transcribe the English words key and car as [k+i] and [k—a] where the [+ ] specified the advanced [k] allophone which occurs before the front vowel, and the [—] the retracted [k] associated with the back vowel. But not all allophones are simply due to the process of accommodation or coarticulation between neighboring sounds. The different [1] sounds such as those at the beginning of leaf and the end of feel cannot be ascribed to the influence of the adjacent items in a simple way. These syllable-initial and syllable-final allophones each accommodate slightly to the neighboring sounds when in different phonetic contexts as in

(a) &[(a)(de)(ji)][(ka)][(o)(do)(ba)][(na)]&
(b) a—de—ji+ka+o—do—ba+na#

**Figure 3**

(a) A bracketed string of symbols showing the tree structure in Figure 2.
(b) The same information as in (a), using juncture marks instead of brackets, and tacit rules in a meta-theory concerning the rewriting of junctures.
leaf, lark, Luke and feel, fall, fool; but, as we shall see later, the differences between the two groups of allophones are such that we must regard them differently within a general phonetic theory. The distinction will be formalized at a subsequent point in this paper; but for the moment we may note that allophones which are due to the influence of the adjacent sounds may be called intrinsic; other allophones, which cannot be simply accounted for in this way, may be called extrinsic.

We must now discuss the exponents of extrinsic allophones and phonemes. The best way of doing this is in terms of a set of phonetic features. We may assume that if two sounds contrast either phonemically or as extrinsic rather than intrinsic allophones in any one language, then we will want them to have different feature specifications. It is more difficult to state the conditions under which we may identify two events in different languages as variants of the same feature. Jakobson and Halle (1956) have said that whenever two different phenomena (such as rounding and pharyngealization) never occur in contrast in a single language, then we may identify them as variants of the same feature. This dictum requires further elaboration.

We may begin by considering a particular body of data. Table I displays many of the consonants and semivowels which occur among some of the 94 languages that I have been able to examine at first hand in the last few years. Most of these data are from West African languages and have been described in detail elsewhere (Ladefoged, 1964b). We now have at the UCLA Phonetics Laboratory high-quality recordings; acoustic analyses; and physiological data such as X-rays, palatograms, linguagrams and air pressure and flow measurements, all of which enable us to characterize the sounds of a wide variety of languages fairly precisely.

The sounds which are represented by symbols in Table I may all be regarded as units in the sense that none of them involves a sequence of any two of the others. Affricates and prenasalized stops are thus not shown, although both of them operate as unit phonemes in many languages. Sounds with secondary articulations, such as the form of labialization which occurs mainly during the latter part of a segment and during its offglide but not its onglide, are regarded as sequences and are omitted. I have also left out many sounds which I have heard, such as the Danish stød, the Arabic emphatics, Korean fortis stops, Javanese and Indonesian 'lax' consonants, Zulu clicks, and others, either because I have not yet investigated these sounds myself sufficiently, or because I do not know how best to categorize them. Furthermore, I have followed a strict rule of leaving out of consideration altogether all sounds which I have not heard myself from an
TABLE 1

All the phonetic items shown contrast phonemically in at least one language with each adjacent item (irrespective of blank spaces), except for those items separated by heavy lines.

<table>
<thead>
<tr>
<th>(A) Upper articulator</th>
<th>lip &amp; ridge</th>
<th>lip</th>
<th>teeth</th>
<th>tongue</th>
<th>back of teeth</th>
<th>hard palate</th>
<th>soft palate</th>
<th>sound</th>
<th>edge &amp; lip</th>
<th>uvula</th>
<th>vocal cords</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B) Lower articulator</td>
<td>lip &amp; up</td>
<td>lip</td>
<td>tip</td>
<td>tip</td>
<td>tip</td>
<td>tip</td>
<td>slide</td>
<td>slide</td>
<td>slide</td>
<td>slide</td>
<td>slide</td>
</tr>
</tbody>
</table>

(C) Name summarizing (A) and (B) →

| Position of the soft palate | Relation between the articulators | Name summarizing (A) and (B) | Action of glottis | Symbol
|----------------------------|----------------------------------|---------------------------|---------------------|-----------|
| raised                     | complete closure                  | (note)                    | voiceless           | p'
|                            |                                   |                           | voiceless aspirated | ph
|                            |                                   |                           | voiceless           | p
|                            |                                   |                           | voiceless           | p
|                            |                                   |                           | voiced implosive    | g
|                            |                                   |                           | breathy voiced      | b'h
| lowered                    | naso                              | (none)                    | voiced              | m
|                            | fricative                         | central                   | voiced              | b
|                            | approxinatation                    | central                   | voiced              | a
|                            | open approximant                   | central                   | voiced              | o
|                            |                                   |                           | voiced              | i
|                            |                                   |                           | voiced              | e
|                            |                                   |                           | voiced              | u
|                            |                                   |                           | voiced              | a
|                            |                                   |                           | voiced              | o
|                            |                                   |                           | voiced              | 0

Informant, and which are known to me only through the literature or by means of tape recordings or personal communication from colleagues. Because of my great ignorance of many of the well-known languages of the world (particularly in the Amerindian, Indian and Far Eastern areas) this means that the table is very incomplete. Its only virtue is that it represents data which I can vouch for myself with a fair degree of accuracy; and it is sufficiently complex to be interesting from the point of view of formalizing a theory of phonetics.

The data have been arranged so that, apart from pairs of symbols separated by heavy lines, each pair of adjacent symbols in either a row or a
column represents a pair of phonetic items which contrast phonemically in at least one of the languages investigated, irrespective of blank spaces. Thus the voiced alveolar stop /d/ contrasts with a similar sound but with a breathy voice release (symbolized /df/) in the Igbo of Owerri Province, with a dental stop /d/ in Isoko, with a laryngealized stop /?d/ in Fula, and with a postalveolar stop /d/ in Ewe. Examples of these and other contrasts between pairs of similar sounds are given in Table 2.

The data in Table I can be specified by setting up categories in a number of different ways. One such scheme is implied by the labels shown. This is not the scheme which I would like to propose as an ultimate system of categories forming the features of a universal phonetic alphabet. But it does enable us to start noting some facts about possible categories. Phonetic features have certain relations determined by the physiological possibilities of the vocal organs. Thus the set of all stops excludes the set of all fricatives, since it is impossible for a sound to be simultaneously a stop and a fricative. A particular phoneme may be in one circumstance a fricative and in another a stop. But on the level of phonetic specification at a given moment a sound must be either a stop or a fricative. On the other hand the set of all stops includes some members of the set of all bilabials and the set of all voiceless sounds. Some feature sets can be grouped together so that they partition the field of possible speech sounds. This is true of the set of feature sets formed of the nasal, stop, fricative, approximant, trill, tap, flap, and vowel sets. There are no speech sounds which do not belong to one of these sets. A set of feature sets which has the property of partitioning the field of possible speech sounds will be called a type set. The set listed above is the one dependent on manner of articulation or stricture type.

Clearly, if two features are to be coalesced and regarded as variants of the same feature, they must both be members of the same type set. Only members of the same type set commute and can be guaranteed not to co-occur. I would also like to suggest a second criterion: two or more phenomena can be subsumed under a single feature if and only if they can be regarded as points on the continuum of that feature and can be described by numbers specifying the amount of the feature which they possess. Thus the difference between a fully voiced initial /b/ as in French and the English initial /b/ with slightly less voicing requires a specification of only the amount of the voicing feature which each of these sounds has. But the difference between the disparate states of the glottis required in the formation of ejectives and implosives cannot be specified in this way. To be in accord with the criterion suggested, these two phenomena would have to be
### Table 2

Examples of contrasts between some of the items in Table 1

<table>
<thead>
<tr>
<th>k'-k</th>
<th>Hausa: wά:k'á</th>
<th>Song: kά:kά</th>
<th>Grandparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ts-ts'</td>
<td>Nupe: tsa</td>
<td>Choose: tʃa</td>
<td>Begin</td>
</tr>
<tr>
<td>dz-dʒ</td>
<td>Dzami: dzami</td>
<td>Bridle: dʒama</td>
<td>Assembly</td>
</tr>
<tr>
<td>ʒ-ʒ̣</td>
<td>Gü: ʒeʃe</td>
<td>It is: ʒeʃə</td>
<td>It is right: ʒə́</td>
</tr>
<tr>
<td>ʒ̣-ʒ̣-ʒ̣</td>
<td>It's broken: ʒə́</td>
<td>It is scattered</td>
<td></td>
</tr>
<tr>
<td>tj-tʃ</td>
<td>Cama: tʃa</td>
<td>Stamp: tʃe</td>
<td>Learn: cə́</td>
</tr>
<tr>
<td>ph-th-kh</td>
<td>Igbo: áphè</td>
<td>Sharpening: āthá</td>
<td>Blaming: əkhá</td>
</tr>
<tr>
<td>p-t-k</td>
<td>Ápè</td>
<td>Pressing: ātà</td>
<td>Chewing: əká</td>
</tr>
<tr>
<td>b-d-g</td>
<td>Mbà</td>
<td>Another: ədà</td>
<td>Crab: əgá</td>
</tr>
<tr>
<td>b-ʒ-ʒ̣</td>
<td>Mbà</td>
<td>Town: ədə̀</td>
<td>Roost: ədə́</td>
</tr>
<tr>
<td>ʒ̣-ʒ̣</td>
<td>Ákà</td>
<td>Power: əfə́</td>
<td>Jaw: tə́</td>
</tr>
<tr>
<td>ḋa-ḅa</td>
<td>Oja</td>
<td>Soap: ọjà</td>
<td>Illness: ọgà</td>
</tr>
<tr>
<td>ḡ-ọ-ọ</td>
<td>Ogà</td>
<td>Fence: ọgà</td>
<td>*Yam</td>
</tr>
<tr>
<td>ḍ-ọ-ọ</td>
<td>Kala</td>
<td>Añà</td>
<td>ọgà</td>
</tr>
<tr>
<td>ḍ-b-ọ</td>
<td>Patà</td>
<td>*Girl: ọba</td>
<td>*Fish: ọgbà</td>
</tr>
<tr>
<td>p-d-d</td>
<td>Añà</td>
<td>Fool: ọda</td>
<td>Dad: ọda</td>
</tr>
<tr>
<td>k-q-x</td>
<td>Serer: Kor</td>
<td>Man: qos</td>
<td>Leg: yol</td>
</tr>
<tr>
<td>m-n-ŋ</td>
<td>Idoma: amà</td>
<td>Bell: ānà</td>
<td>*Fruit: ẹgà</td>
</tr>
<tr>
<td>ṣ-n-ŋ</td>
<td>Ênà</td>
<td>Quick: ẹnà</td>
<td>Divining: ẹjà</td>
</tr>
<tr>
<td>ḍ-t-p</td>
<td>Ewe: Épà</td>
<td>He: ẹ́</td>
<td>Polished: ẹ́</td>
</tr>
<tr>
<td>w-β-v</td>
<td>Éwè</td>
<td>He made: ẹ́</td>
<td>Ewe language: ẹ́t</td>
</tr>
<tr>
<td>s-β-j</td>
<td>Hausa: ƙàsa</td>
<td>Play: ƙàsà</td>
<td>Rust: ƙàsà</td>
</tr>
<tr>
<td>s-β</td>
<td>Urhobo: ìsè</td>
<td>Feather: ìfà</td>
<td>Grey hair</td>
</tr>
<tr>
<td>ə-ə</td>
<td>Oje</td>
<td>Blue: oja</td>
<td>Suffering</td>
</tr>
<tr>
<td>ʃ-ʃ</td>
<td>Bura: ʃà</td>
<td>Lost: ʃàl</td>
<td>Guts: hala</td>
</tr>
<tr>
<td>x-ʃ</td>
<td>Ora: ʃà</td>
<td>Story: ʃà</td>
<td>Wife: ʃà</td>
</tr>
<tr>
<td>ḍ-ʃ</td>
<td>Bura: ʃà</td>
<td>Beat: ʃà</td>
<td>Cow: ʃà</td>
</tr>
<tr>
<td>l-ə</td>
<td>Lá</td>
<td>Build: ọlù</td>
<td>Neck</td>
</tr>
<tr>
<td>l-œ-œ</td>
<td>Bini: Áḷzi</td>
<td>*Monkey: ọ́ḷà</td>
<td>Caterpillar: ọ́ḷa</td>
</tr>
<tr>
<td>l-ʃ-ʃ</td>
<td>Isoko: ọlà</td>
<td>Jump: ọlà</td>
<td>Flight: ọlà</td>
</tr>
<tr>
<td>m-ŋ-h</td>
<td>Birom: ìkà</td>
<td>Wife: ìjìgà</td>
<td>Yesterday: ọ́mà</td>
</tr>
<tr>
<td>j-q-ʃ</td>
<td>Margie: jàɖà</td>
<td>Picked: jà</td>
<td>Give: ʃà</td>
</tr>
<tr>
<td>w-ŋ-ŋ</td>
<td>Idoma: ọ́wà</td>
<td>Width: ọ́wà</td>
<td>Moon: ọ́wà</td>
</tr>
<tr>
<td>ʃ-ʃ</td>
<td>Hausa: ɓàrà</td>
<td>Begging: ɓàrà</td>
<td>Servant</td>
</tr>
</tbody>
</table>
regarded as separate features, each capable of generating different speech sounds.

This second criterion is entirely in accord with the theory of Jakobson, Fant and Halle (1951). One of the many excellent points in this theory is the observation that the distinctive features specify relative properties. What matters in the description of the sounds of a particular language is that if a sound is, for instance, + compact, then it possesses more of the feature compactness (whatever that may be) than a contrasting sound which is considered to be — compact. In another language the opposition compact—non-compact may be manifested by a pair of sounds with quite different degrees of compactness, such that the one which is considered to be + compact is most like the one which is considered to be — compact in the first language. In this way it is possible to limit quite considerably the number of features needed to specify all the languages of the world. But the technique will work only if the features specify clearly defined physical scales which can be observed and measured. One of my main difficulties with the theory proposed by Jakobson, Fant and Halle is that their descriptions of the features are not specific enough to be able to assign numerical values to all sounds in every case.

It may not be necessary to be so specific when discussing the linguistic organization of features. In these circumstances it may be legitimate to regard voiceless ejectives and voiced implosives or laryngealized stops as manifestations of the feature glottalized, as suggested by Jakobson (1962) on the grounds that no language has both voiced and voiceless ejectives or voiced and voiceless implosives; and Carnochan (1952) has shown that the linguistic description of a particular language, Hausa, is considerably simplified by classing all the glottalized consonants together. But as long as the difference between two phenomena is qualitative rather than a matter of degree, their coalescence is in some ways arbitrary. There does not seem to be any physical scale on the auditory, acoustic or physiological level of description which can be applied to ejectives and implosives such that their differences can be accounted for by a numerical specification of the amount of the quality which they possess. Nor can I find any physical continuum in which [i] and [u] differ from [a] which is the same as the physical continuum in which [p] and [k] differ from [t], and [m] and [n] differ from [n]. The second criterion suggested here (and the view expressed in Jakobson, Fant and Halle, strictly speaking) does not permit the possibility of phonologically context sensitive rules which will allow us to rewrite the exponents of vowels in one way and consonants in another. Descriptions of this kind may be very elegant from a linguistic point of view; but they make it
impossible to use non-arbitrary measurable distinctive features for phonetic specifications. Arbitrariness at the phonetic level can be avoided only by retaining the restriction that sounds should be considered to exhibit variants of the same feature only if the feature is a completely specified continuum and the sounds differ in the degree in which they have the feature.

We may now return to the consideration of when two allophones must be regarded as belonging to two different sound types in the universal phonetic alphabet. We previously noted that we would like to recognize the necessity of a different feature specification when the difference between allophones was such that it could not be ascribed to coarticulation with the neighboring sounds. This criterion can be put more formally by saying that whenever two allophones differ in the degree in which they exhibit a feature and the difference can be specified in terms of a simple numerical model which takes into account only the adjacent sounds, then we can say that the differences are those of intrinsic allophones. But all other differences are those of extrinsic allophones.

I prefer this criterion for distinguishing between the two types of allophones to that of Wang and Fillmore (1961), from whom I took the terms. For them intrinsic allophones reflect the structure of the speech mechanism in general, and extrinsic allophones reflect the speech habits of a particular community. Their terms are apt, but it seems better for the distinction to be based on the two types of allophones which must be recognized in a general phonetic theory, rather than on knowledge of whether a given difference between two sounds is a learnt speech habit or an inevitable consequence of coarticulation. In studying the phonetic structure of a wide variety of languages I am sometimes surprised by finding that speakers take care not to make an articulatory adjustment which I had considered to be an inevitable coarticulation and a language universal.

The distinction that is suggested here is motivated by the desire for economy in the phonological component of a grammar of a language. The experimental work of Lindblom (1963, forthcoming) and Ohman (1964, forthcoming) has shown that it is possible to specify 'target' positions for the formants and the vocal tract shapes of sounds which might be extrinsic allophones, and then, by the application of certain formulae, predict (or generate) the actual formant positions and vocal tract shapes which will occur when these sounds occur in context. They are thus able to account for the variations between intrinsic allophones which are due to coarticulation and which, in the particular language they are investigating, are not voluntarily controlled by the speaker. But they would need to specify extrinsic allophones as having different target positions, since such differ-
ences are made deliberately and are not simply ascribable to coarticulation. In assessing the number of phonetic features required in a general theory of phonetics we must consider the extent to which variations in place of articulation can be taken to be variations in the degree of one or more features. In so far as the articulations shown as the column headings in Table I represent points in a continuum, we must have almost as many different place of articulation features as there are columns. The only possibilities for reduction are by identifying postalveolar and prepalatal (which are neighboring items which do not contrast in any language) and perhaps considering separately the double articulations labial alveolar (which may not have been placed at the appropriate place in the continuum), labial palatal and labial velar. We are then left with 8 columns in which the sounds could be regarded as differing in the degree in which they possessed the single feature nearness-of-the-place-of-articulation-to-the-glottis. In a general phonetic theory we will have to state that this feature has 8 possible states for generating sounds.

In passing I might note that I have been unable to find any additional parameters which could be used to account for variations in place of articulation. At least three binary distinctions would be needed to generate the subtle variations shown in Table I. But I cannot find a workable definition of even a single feature such as the one labeled grave-acute by Jakobson, Fant and Halle (1951). It is interesting that Halle (1959) in his excellent book *The Sound Pattern of Russian* notes that there are many difficulties in identifying consonants with respect to this feature; and Fant in his recent publications on phonetic specifications (1962, 1964) does not mention any features such as grave-acute and compact-diffuse, although he still uses features such as nasal-oral and voiced-voiceless to specify aspects of sounds roughly corresponding to manner of articulation and state of the glottis.

I am not yet prepared to give a definitive arrangement of phonetic categories, which will account for the data in Table I in the most economical way. There are, of course, more co-occurrence restrictions than the fact that a feature can never be combined with another feature in its own type set. Many of these are formalized in the present arrangement of Table I. Thus only stops have the full range of possible phonation types; trills and flaps cannot be voiceless; and the option voiced-voiceless is open only to lateral fricatives as opposed to lateral approximants. But, if we are to avoid generating many sounds which have not been observed, at least in the sample of languages represented in Table I, then we must find a way of stating additional restrictions. For example, we should have the option of choosing the voiceless aspirated feature only when we have already chosen
both the stop feature and one of the features bilabial, alveolar, palatal or velar. Dependencies of this kind can be shown most easily by means of a finite state machine or by means of rules as in a phrase structure grammar; but no theory of phonetics has yet been formalized to this extent.

Some formal status should also be given to two different kinds of restrictions on possible combinations of phonetic categories; some, such as a lingual-velar trill, are physiologically impossible; others, such as an ejective dental fricative, can be produced comparatively easily, but have never been recorded in any language. (Since the proportion of languages with dental fricatives is small, and the proportion with ejective fricatives is also small, I would guess that there is almost certainly no language in which this particular combination occurs.) This is another aspect of phonetic theory which has not been fully investigated.

We must now reconsider the possibility of using Jakobson and Halle's distinctive features as part of a general phonetic theory. Note that we are not here concerned with the use of distinctive features as a classificatory matrix at the phonemic level, but only with the implications of trying to achieve phonetic specificability through the use of the same set of features in a phonetic matrix. Current distinctive feature theory (Halle 1964a) seems to be that there are about fifteen features. On the phonetic level these features are not necessarily binary; the rules of the phonological component of a grammar are said to be capable of assigning integers representing the different degrees of intensity which a feature may manifest. But the features are still viewed as representing 'the capacities of man to produce speech sounds and constitute, in this sense, the universal phonetic framework of language.' (Halle 1964a). If we consider the possibility of only presence or absence of a feature, which would be the minimum for requiring the feature in a phonetic framework, and disregard the added possibility of more subtle differences in degree, then this phonetic framework will generate $2^{15}$ or 32,768 sound types. Of these 8,192 are clearly irrelevant to our discussion of the data in Table I, since they are vowels (i.e. + consonantal and + vocalic). But 24,576 would be available to account for the 93 sounds shown in Table I.

All the accounts of distinctive feature theory have pointed out that there are some restrictions on the combinations of features which may occur. But if we subtract from the total number of consonantal sound types all those generated by impossible combinations of features as given in Jakobson, Fant and Halle (1951), Jakobson and Halle (1956) and Halle (1964), we are still left with a minimum of 12,288 consonantal sound types. This seems an unnecessarily large number.
We may also note that it seems most unlikely that the twelve features in Jakobson and Halle (1956) or the fifteen mentioned in Halle (1964) would be sufficient to account for the phonetic data represented in Table I. As Fant has said, 'The limitations of the preliminary study of Jakobson, Fant and Halle are that the formulations are made for the benefit of linguistic theory rather than for engineering or phonetic applications. Statements of the acoustic correlates to distinctive features have been condensed to an extent where they retain merely a generalized abstraction insufficient as a basis for the quantitative operations needed for practical applications.' (Fant 1962). Many of the sounds represented in Table I have never been discussed at all by addicts of distinctive feature phonetics.

But the main objection to the usual distinctive feature approach is that it is based largely on auditory criteria. It is sometimes claimed that acoustic (or auditory) descriptions are preferable to articulatory descriptions because 'the same acoustic phenomenon may be obtained by very different means' (Jakobson, Fant and Halle 1951). In fact such cases are not very well authenticated and need not occur at all if proper articulatory categories are set up. There are no two combinations of any of the categories illustrated in Table I which will give the same acoustic result. This being so, there seems to be no reason for preferring auditory criteria; and it is evident that if physiological criteria are used it is easier to state the inherent restrictions among phonetic features. It is not, for example, useful to consider the phonetic feature discontinuous as being opposed simply to the feature continuant. The feature discontinuous (or stop) is much more usefully opposed to all the other features of its own type set, such as nasal, trill, and vowel, but not to features of other type sets such as voiced and voiceless. This kind of relationship is implicit in the traditional classification of sounds in terms of place and manner of articulation. Forgetting, for the moment, the possibility of a more elaborate general theory of phonetics which would include a formal set of dependency rules, we may note that even the traditional phonetic chart as in Table I provides a far more economical specification of possible speech sounds than Jakobson-Fant-Halle distinctive features phonetics. This is because all traditional phonetic charts are arranged so as to preclude a number of possible combinations of states of the glottis and manner of articulation. The restrictions implicit in Table I can be formulated in terms of a set of rules or a finite state automaton as shown in Figure 4. Table I uses 29 states in all (the 16 shown in Figure 4 and the 13 places of articulation) intersecting to form 273 categories, of which 93 represent sounds which actually occur in the languages represented in the corpus. As we have seen, distinctive feature theory has 15 features,
A finite state machine which will generate the restrictions in combinations of manner of articulation and state of the glottis for the data in Table I. (Note that these terms require specific definitions, which may not be the usual ones. Thus "breathy" denotes a specific state of the glottis, which is sometimes called "breathy voice"; and "implosive" denotes another state of the glottis including both a downward movement and a particular mode of vibration of the vocal cords.)

each of which must have, on the phonetic level, a minimum of two states, so that there are at least 30 states in this phonetic framework. Allowing for the stated combinatory restrictions, this apparatus generates 12,288 categories and even then probably does not account for all the 93 sounds.
I am entirely convinced by the arguments advanced by Halle (1964b) in favor of some set of distinctive features which can form the classificatory matrix required in the phonological component of a grammar; and I would also agree with him and Jakobson in the desirability of trying to establish a set of phonetic features which reflect some universals of language. But it seems to me that the Jakobson-Halle distinctive features can be shown to be most unsatisfactory as part of a general theory of phonetics.

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0. In keeping with the theory of grammar here represented, this paper is interested in contrastive construction types and in relations between such types. In spite of many recent statements to the contrary, taxonomy, i.e. classification, is an abiding interest of science in general and of linguistic science in particular. The biological sciences botany and zoology continue to be flourishing taxonomic disciplines—even though they have also been concerned now for over a century with developmental hypotheses. The chemist is interested not only in chemical reactions and processes but in the identification, classification, and description of elements and compounds. The astronomer is concerned not only with schemes of stellar evolution but uses these very schemes as a means of classifying stars. Linguistics—mainly classificatory in the previous two decades—has recently been enriched by bringing into focus transformational relations between constructions. But interest in transformations is not mutually exclusive with interest in classifying constructions and their parts. On the contrary, transformation relations between constructions are of considerable classificatory value. The fact that in astronomy a white dwarf star is a ‘transform’ of a red giant does not mean that we are no longer interested in distinguishing the two types of stars. Rather, the posited development is useful in classifying these two and other types in a coherent taxonomic scheme.

On the other hand, having granted the taxonomic significance of grammatical transformations, we find that admitting them as a classifying device has some important implications: (1) Transformational relations are not the only parameters which relate constructions. Rather transformations belong to a system of relations which includes non-transformational param-

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eters as well. (2) A given coordinate, e.g. transitivity, in a system of contrasting types may involve both transformational and non-transformational parameters. (3) Transformations therefore do not comprise a separate level and need not be segregated in a separate section of the grammar.

This paper also attempts to show that certain concepts and notational conventions of tagmemics are useful in formulating linguistic transformations.

Relations between grammatical constructions within a language may be conceptualized as a field structure, i.e. as space in $n$ parameters (or parameter classes). This can be conveniently represented in a graph with a system of coordinates provided that the coordinates which characterize an entire system do not exceed three. A fourth coordinate characterizing an entire system may be represented by two or more related three-dimensional graphs. Parameters which do not characterize an entire system can be represented more conveniently as sub-divisions within another coordinate.

In conceptualizing grammatical systems in this fashion care should be taken to insure that the various constructions thus charted are, in Pike's words, "well-delineated constructions." Well-delineated constructions are obtained not only by attention to systemic considerations of the sort discussed here but by attention to contrasting internal structures of constructions and to their distribution within other constructions. The constructions grouped into such a system may be from any level, i.e. the system may be a system of word types (morphological constructions), of phrase types, of clause types, or sentence types, or even conceivably of paragraph and discourse types.

The field structures here described are systems of clause structures in Ostuacan Zoque, Sierra Popoluca, and Tlahuitoltepec Mixe. In that these three languages are genetically related we find certain resemblances among the three field structures alongside considerable variety. Zoque is the simplest system; Sierra Popoluca, the most involved; and Mixe, the most symmetric. Of necessity these systems will be described with a minimum of actual linguistic data. The data for Zoque and Sierra Popoluca are published and easily available. A description of Tlahuitoltepec Mixe is now in the hands of the editor of IJAL. Zoque and Sierra Popoluca display very similar systems of clause types. Mixe is strikingly divergent.

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3 Pike, Language 38.231-42; Longacre, "Trique clause and sentence: A study in contrast, variation and distribution" (submitted to IJAL).
4 Ralph Engel and Robert E. Longacre, "Syntactic matrices in Ostuacan Zoque," IJAL 29.331-43; John Lind, "Clause and sentence level syntagmemes in Sierra
1. Zoque has an open-ended system comprising at least nineteen clause types. This system may be graphically represented in reference to two coordinates (as in diagram I): (1) mood; and (2) transitivity.

Mood is a variable with four values: declarative; subordinate; interrogative; and imperative. The latter three moods are transforms of the declarative. Specifically, a declarative clause is transformed to a subordinate clause by preposing a conjunction and/or suffixing the verb; the six sub-types of subordinate require separate transformation rules. Interrogative and imperative are obtained by inversion transformations (permuting the predicate to the fore of the clause) plus employing one of fourteen question words in the interrogative; and plus use of a specifically imperative form of the verb in the imperative.

Transitivity is a variable with an ordered succession of values: zero grade, i.e. non-transitive; grade one, intransitive; grade two, transitive; grade three, ditransitive; and scattered instances of higher grades of transitivity in rare clauses which are possibly of marginal grammaticality. For this reason the system of Zoque clause types is considered to be open-ended. A third parameter, that of referential versus causative, divides clauses of transitivity grade three on up the scale.

In non-transitive clauses transitivity is irrelevant. The clauses are

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Popoluca," IJAL 30.341-54; Shirley Lyon, "Tlahuitoltepec Mixe clause structure" (submitted to IJAL).

descriptive or equative and have non-verbal (nominal, attributive, or participial, predicates), e.g.

(1) mihci mbyanemcete you (are) a priest

Intransitive clauses have one dramatis persona: the subject. Transitive clauses have two dramatis personae (both of which need not be animate): subject and object. Ditransitive referential clauses have three dramatis personae: subject, object, indirect object (only third person). Ditransitive causative clauses also have three dramatis personae: subject, causative object, object. In higher grades of transitivity a benefactive object ('for someone') as well as an indirect object ('to someone') may occur—and both may co-occur with causative object. Thus, such a Zoque clause as the following with transitivity grade five (quadruple transitive) is probably the extreme of complexity generated by the system (and of marginal grammaticality):


Grades of transitivity from one on up (intransitive, transitive, and ditransitive) are in partial transformational relationship. Nevertheless, the transitivity scale is more basic than the transformations that partially characterize it. Thus, there are verb stems that are inherently intransitive (e.g. min come), others that are inherently transitive (?a?m see), and still others that are inherently ditransitive (verbs of delivery, such as ci? give). There are a few verbs that function as both transitive and intransitive. These various verb classes determine kernel clauses on all three grades of transitivity. But there are intransitive clauses whose verbs are derived from transitive.\footnote{In the joint paper with Engel we do not mention that intransitive verbs may be derived from transitive. Wonderly, however, mentions a suffix 212 —?oy which intransitivizes transitive verbs in Copainnalá Zoque (IJAL 17.150).} Regular transformations derive transitive clauses from intransitive, and ditransitive clauses from transitive. Thus both kernel and derived clauses are found on all three lower grades of transitivity (although grades of transitivity higher than three are non-kernel). The ordered increase in number of dramatis personae is more basic to the transitivity scale than the transformations.\footnote{In Trique, e.g. there are three grades of intransitivity: meteorological clause (zero grade); intransitive (grade 1), and transitive (grade 2). Nevertheless, there are not many patterns of verb derivation from intransitive to transitive verb. One suffix dV-}
The transformations presented here and in subsequent sections of the paper are given in modified tagmemic notation. Each clause-level tagmeme (functional segment of the clause) is represented by two symbols separated by a colon. The colon is normally read "given function manifested by following set." In a tagmemic formula the manifesting set is often given in terms of the construction types (syntagmemes) of a structurally lower level. Thus, clause-level functions are commonly manifested by various phrase types. The colon may, however, be used to indicate particular lexical manifestations. Thus, in example (2) the symbol-colon-symbol sequence is used as an analytic device for a particular clause (e.g. S: te p\textsuperscript{\text{a}7nis} the man means "subject function manifested by the particular Zoque noun phrase which follows"). In transformation rules employing tagmemic notations the colon may be followed by a symbol (e.g. NP = noun phrase) which has a subscript (NP\textsubscript{1}). If the same symbol with the same subscript occurs beyond the arrow, this indicates that the same lexical item found preceding the arrow occurs also in the indicated function following the arrow. If somewhere following the arrow, a symbol occurs with a new subscript this indicates something added in the course of the transformation. Thus, the symbols labelled with subscripts may be used to keep track of particular lexical exponents of various tagmemes. Use of this tagmemic notation obviates the necessity of giving the transformational rule in two stages.\textsuperscript{7} Furthermore, use of the tagmemic notation keeps better account of the functions involved, especially in languages like the three here presented where permutations of clause-level tagmemes are relatively free.

Addition of -hay benefactive suffix to a verb boosts that verb and its clause one grade in the scale of transitivity by adding one further dramatis persona, the benefactive object. Thus, an intransitive clause may be transformed to a transitive:

\[ (3) \quad +P_i;V_i \pm S;NP \Rightarrow +P_t;V-hay(t) \pm S;NP \pm O;NP_2 \]  

(where \(P_i=\)intransitive predicate, \(S=\)subject, \(P_t=\)transitive predicate; \(O=\)object, \(V_i=\)intransitive verb; \(V-hay=\)transitive verb formed by

\textit{causative} serves to transitivize some intransitives. But causative verbs often have patterns of lexical selection quite distinct from those of the corresponding intransitives. Consequently, while there is word-level derivation there is little clause-level transformation. The transitivity variable in Trique is an ordered sequence of values but with little transformational relation along the sequence.

\textsuperscript{7} Cf. Bach's formulation of the 'passive optional' transformation in English (Bach, \textit{An Introduction to Transformational Grammars}, 62):

\begin{align*}
\text{Structural analysis: } & NP \rightarrow Aux \rightarrow V \rightarrow NP \\
\text{Structural change: } & X_1 \rightarrow X_2 \rightarrow X_3 \rightarrow X_4 \\
\Rightarrow & X_4 - X_2 - \text{be} - \text{en} - X_3 - \text{by} - X_1
\end{align*}
adding -hay benefactive, and NP=noun phrase, with subscripts keeping track of identity of phrases in the transformation).

By a similar rule the transitive clause is transformed to ditransitive referential; only verbs inherently transitive participate in the transformation:

\[(4) \quad +P_t:V_t +S:NP_1 \pm O:NP_2 \Rightarrow +P_{t_2}:V-hay_{(t_2)} \pm S:NP_1 \pm O:NP_2 \pm IO:NP_3 \quad (\text{where subscript } t \text{ marks transitive predicate manifested by transitive verbs; where } t_2 \text{ marks ditransitive predicate manifested by ditransitive verbs; and where } IO=\text{indirect object}).^8\]

Addition of another prefix ?ak- causative also boosts a verb and its clause one grade in the scale of transitivity. The transformations are more complex in that addition of this prefix shifts the noun phrase manifesting subject to object or causative object (agent) and adds a new dramatis persona as subject. An intransitive clause may be transformed to transitive in this manner:

\[(5) \quad +P_l:V_l \pm S:NP_1 \Rightarrow +P_t: ?ak-V_t \pm S:NP_2 \pm O:NP_1.\]

\[(6) \quad \text{toks te } nA \text{ the water boiled} \Rightarrow \text{pegru}s \ ?ak-toks te nA \text{ Peter caused-to-boil the water (pegru}s Peter; ?ak-toks caused to boil; te nA water).\]

Similarly, a transitive may be transformed to ditransitive causative:

\[(7) \quad +P_t:V_t \pm S:NP_1 \pm O:NP_2 \Rightarrow +P_{t_2}: ?ak-V_{t_2} \pm S:NP_2 \pm CO:NP_1 \pm O:NP_2.\]

Thus the Zoque

\[(8) \quad ?Ac mi ?ncahu I \text{ hit you } \Rightarrow \text{he?tis } ?A \text{ mi } ?ak-ncahu \text{ he caused-to-hit-me you (he?tis he, ?Ac~?A I, me; mi you).}\]

2. Sierra Popoluca is characterized by an open-ended system comprising at least thirty-two types of clauses (diagram II). In spite, however, of the

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^8 The transformational rule given in (4) is set up so that only inherently transitive verbs \((V_t)\) may be derived to transitive by adding -hay benefactive. Present data available to me are insufficient to clarify the co-occurrence privileges of ?ak-causative and -hay benefactive. Both occur on the same form in verb ci? give of example (2) above; but this may be as exceptional and marginal as the fifth grade of transitivity there exemplified. Zoque data at present available to me also indicate that ?ak- can be prefixed to an intransitive (such as ka? die) to make a transitive (such as ?ahka? kill) and this may in turn be given another ?ak- to make a ditransitive (such as ?ak?ahka? cause to kill). These co-occurrence possibilities, when thoroughly understood, need to be built into the tagmemic-transformational rules. The function-set notation makes it comparatively easy to build such constraints into the rules. Thus the rule given in (8) could be modified to read \(-P_t:V_t/ak-V_t\).
greater complexity of the system it is in many ways similar to that of Zoque. As analyzed by Lind, the system first splits into dependent versus independent clauses, with but two types comprising the former: general dependent clauses, and time dependent clauses. General dependent clauses consist of two parts: a relator (such as hu·t where, iga that, hu?uc like, and hučis when; and an axis consisting of any clause type except imperative. Time dependent clauses similarly consist of two parts: a relator (mu when or suffix -pa·m/-wi·m on verb, time subordinator; an axis consisting of any clause type except imperative, plus the special constraint that intransitive clauses which manifest axis tagmeme to time dependent clauses do not prefix to their verbs the pronoun series otherwise characteristic of intransitive clauses, but rather take a series found in transitive verbs.9

Lind next divides independent clauses into non-verbal and verbal. While Zoque has but one non-verbal type which is easily handled as zero value of the transitivity variable, and which has three values of the mood variable, SP has three types of non-verbal clauses: stative, possessive and factive,

9 Lind's analysis of dependent clauses may be compared with the Engel-Longacre analysis of Zoque subordinate clauses. In Zoque, since the system of clause types is of modest proportions and since most subordinate clauses involve affixal modification of their verbs, it seems feasible to set up a whole vector consisting of subordinate clause types in one-to-one correspondence with the declarative types. In SP, where the system is of considerable complexity, and where not only declarative but indefinite, obligatory, and reciprocal clauses can be made subordinate it seems simpler to adopt the alternative analysis here summarized. As co-author of Engel's paper and linguistic consultant for Lind and Shirley Lyon, I bear the opprobrium for whatever inconsistency may be present among the three analyses.
and is better handled as a separate coordinate. Thus such a noun as *ki·pi wood* may be predicate of a stative clause:

(9) *ki·pi (it is) wood.*

With suffixation of *-i?y possessive predicate marker* and pronouns, this same noun can be the predicate of a possessive clause:

(10) *ki?ibi?y he-has-wood.*

Possessive clauses can be transformed to possessive noun phrases by deleting the *-i?y* suffix and changing the person marker series. Still a third clause type, the factive, can be built on such a noun as *wood* by suffixing *-a·/-a·p factive predicate marker:*

(11) *si?ip mik?i·iba·p now you-are-wood-chopping.*

Factive clauses are not transformable to any phrase type.

The remaining twenty-seven SP clauses are verbal. They constitute a sub-system in the same three coordinates as seen in Zoque: (1) mood; (2) transitivity; (3) referential versus causative. Mood is a variable representing the set: declarative, indefinite, imperative, obligatory and reciprocal. While subordinate is considered to be a mood in Zoque it is handled as a broader and more basic dimension in SP. Interrogative patterns as a mood on the clause level in Zoque, but seems to pattern better on the sentence level in SP. Both Zoque and SP have declarative and imperative moods. SP has also the indefinite, obligatory and reciprocal. The five SP moods are exemplified here by minimal clauses consisting only of predicates manifested by verbs; all examples are intransitive:

(12) *anikpa I-am-going (declarative);*  
*nikni·mpa someone-is-going (indefinite);*  
*n?i·gi?i go! (imperative);*  
*nigi?i he-should-go (obligatory);*  
*nanikta· he took himself away.*

In the transitive, indefinite mood is often passive in thrust:

(13) *kocta· he-is-hit;*

and reciprocal involves two subjects:

(14) *nakocyaha· they-hit-each-other.*

The transitivity variable has an ordered succession of four values: grade one, intransitive; grade two, transitive; grade three, ditransitive; and grade four, tritransitive. In contrast to Zoque where grades of transitivity higher
than three are difficult to document and of marginal grammaticality, SP clauses of transitivity grade four are not uncommon. In both Zoque and SP, however, transitivity grade five is probably the extreme of productivity of the system. Furthermore, the higher grades of transitivity seem to be confined to the verb give (ci in Zoque; čí in SP). The SP example, given by Lind, of grade five transitivity is:

(15) he?m čó·mo ikčí?a?ypa pe·to iyo·mtü-wi he?m wîd³a·ya iša·mni
    the old woman caused Peter to give the old man's bananas to his
    sister. S: he?m čo·mo the old-woman; P,tč ikčí?a?ypa she-caused-
    him-to-give-his (another's)-it-to-her (another); CO: pe·to Peter;
    IO: iyo·mtiwí his sister; BO: he?m wîd³a·ya the old-man; O:
    iša·mni his bananas.

Dramatis personae in the various grades of transitivity are much as in Zoque: subject in intransitive clauses; subject and object in transitive; subject, object, and benefactive object in ditransitive referential; subject, object, and causative object in ditransitive causative; subject, object, indirect object and benefactive object in tritransitive referential; subject, object, causative object and benefactive object in tritransitive causative. Verb roots occur as inherently intransitive or inherently transitive; a few verbs belong to the intersection of both classes. Verb inflection and clause structure of intransitive and transitive clauses are sufficiently distinct that a clean partition of the two is possible. Some intransitive verbs are derived from transitive by addition of -o³y intransitivizer. Presumably, certain transitive clauses can be transformed into intransitive by addition of the affix to the verb and deletion of the object. Apparently only one verb, čí give is basically ditransitive (referential) in contrast to a set of delivery verbs in Zoque.

Much as in Zoque any of the affixes ak- and na- causative prefixes, and -a³y benefactive suffix, on being added to a verb, boost that verb one grade in the scale of transitivity. Only ak- and na- are added to intransitives to derive transitives. The third suffix -a³y benefactive is added to a transitive (which may have been derived from intransitive by addition of ak-/na-) to form ditransitive referential. Inherent transitives plus ak-/na- become ditransitive causative. From the ditransitive referential the tritransitive types are derived: addition of a further -a³y benefactive (resulting in a repeat sequence -a³ya³y for all verbs except čí which is inherently ditransitive referential and adds but one -a³y) gives the tritransitive referential. Addition of ak-/na- causative to a ditransitive referential gives tritransitive causative. Two specific transformation rules follow with analyzed examples.
The first rule derives ditransitive causative from transitive; the second
derives a tritransitive causative from a ditransitive referential.

\[(16) \quad +P_t:V_t \pm S:NP_1 \pm O:NP_2 \Rightarrow +P_{t=2:}ak-/na-V \pm S:NP_3 \pm CO:NP_1 \pm O:NP_2.\]

\[(17) \quad \text{he}'\text{m makti ihokspa ika'-ma the spirit being hoes his field} \Rightarrow \text{he}'\text{m makti inihokspa ika'-ma he caused the spirit being to hoe his field.}\]

In the former clause \text{he}'\text{m makti the spirit being} is subject and ika'-ma \text{his field} is object; in the transform \text{he}'\text{m makti is causative object and a new subject (specified only vaguely in the verb affixes) is brought in.}\n
\[(18) \quad +P_{t=r:}V-a'y \pm S:NP_1 \pm O:NP_2 \pm BO:NP_3 \Rightarrow +P_{t=3:}ak-/na-V-a'y \pm S:NP_4 \pm CO:NP_1 \pm O:NP_2 \pm BO:NP_3.\]

\[(19) \quad \text{ikoca'y ima-nik he}'\text{m ika-wah his son hit his (somebody else's) horse} \Rightarrow \text{he}'\text{m siwan ikkoca'y ima-nik he}'\text{m ika-wah John caused his son to hit his (somebody else's) horse.}\]

In the first clause ima-nik \text{his son} is subject; he}'\text{m ika-wah \text{his horse} is object, and there is an implied (but unstated) third dramatis persona, the benefactive object, which is possessor of the object and as such distinct from the subject.}\n
In the transform, he}'\text{m siwan \text{the John} is the subject, and ima-nik \text{his son} is causative object, while the other relations are undisturbed.}\n
3. Tlahuitoltepec Mixe has a closed system of twenty-two clause types in four coordinates (and an extra systemic non-verbal type not illustrated here): (1) voice; (2) transitivity; (3) mood; and (4) orientation. Voice is a variable with three values: active (with fourteen clause types); imperative (with four clause types); passive (with four clause types). Imperative and passive clauses are transforms of the indicative. Transitivity is a coordinate with a succession of values much like in Zoque and SP. The last two coordinates are specific to Mixe. Thus Mixe 'mood' has nothing in common with mood in the other two languages of the family. I first describe these latter two parameters which are peculiar to Mixe, then transitivity, and finally voice.

Mixe has a kernel system of six clause types distinguished by the presence in the verbs of six differing sets of pronominal prefixes indicating first,

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10 In SP the one 'for whom' something is done and 'on whose possession' something is done are expressed by the same grammatical device. Both are here termed benefactive object (BO) — a name which obviously fits only the former usage well. But approximate labels are sufficient in any taxonomic science provided that they receive proper meaning in the context of description. The expression of "benefactive object" and "object possessed by a person other than subject" by the same grammatical category is not uncommon in Mesoamerican languages.
second, and third person: (1) n-, m-, y/t-; (2) n-, š-, t-; (3) š-, m-, #; (4) š-, m-, y-; (5) #, m-, #, and (6) n-, m-, y-. The six pronoun series are in one-to-one correspondence with the six clause types which are assigned the same numbers. The verbs of clause types (1), (3), and (5) contrast with the verbs of clause types (2), (4) and (6) as to choice of allomorphs of the tense-aspect-mood morphemes and the intricate morphophonemic changes which accompany these various allomorphs. Furthermore, clauses (1), (3) and (5) occur either without an introductory tagmeme or with an introducer (I') comprised of a limited list of interrogatives, relatives, conjunctions, and adverbs (midi? which, ti what, pàn who, whom, pànA if, paty for this reason, kumA since, ne?ekA better, sumA always. By contrast clause types (2), (4), and (6) occur with an introducer tagmeme (I") which is obligatory except under very special and specific conditions. The set of items comprising I" shows very little intersection with that comprising I': suco how; tiko why, pàn who, whom, mè where, sò how, wàntem when (future interrogative), wànti when (past) paty for this reason, hà?akASp because, ne?ekA better, ku when, hâc and, shàc and then; as well as any phrase or particle expressing negation, location, time, or manner.11 Only the particles pàn who, whom, paty for this reason, and ne?ekA better characterize both lists. The wealth and variety of introducer items in clauses (2), (4), and (6) plus the all but obligatory status of the introducers indicates that these clauses are in some way dependent on the introducers. They are termed therefore conjunct clauses. Clauses (1), (3), and (5)—not so dependent—are called nonconjunct. The distinction is similar to that of dependent and independent clauses in some languages but more subtle and arbitrary in that particles of the sort usually found in dependent clauses are found in both lists of introducers. Furthermore, interrogatives are found in both lists. Therefore, neither dependent versus independent nor declarative versus interrogative are considered to be relevant parameters to the system of Mixe clauses. The contrast nonconjunct versus conjunct gives the two values of the variable here called mood.

The occurrence of the six contrasting pronoun series is, however, only partly explained by reference to mood. A second variable with two values is orientation. I quote here Shirley Lyons: "A clause may be oriented towards its actor, its goal or its subject. The first two orientations occur

11 Searle Hoogshagen, in an unpublished study of Coatlán Mixe, analyzed negation, location, time, and manner in introducer function in conjunct clauses as permutations of the same clause-level tagmemes. Lyon's analysis sets up an intersection of manifesting classes between I" and certain other clause-level tagmemes.
with transitive. With a transitive verb and a given set of dramatis personae the selection of actor orientation versus goal orientation is predictable, according to a hierarchy of importance. In this hierarchy six persons and categories rank as follows (from greater to lesser importance): first person, second person, third person definite, third person indefinite, animal, thing. The dramatis persona of highest rank in a situation may be represented by a noun phrase and cross-referenced to the prefixes of the verb manifesting predicate, or the latter device may be used without the former. When the actor or the initiator of the action outranks the goal or recipient of the action, the clause will be actor oriented. If the goal outranks the actor the clause will be goal oriented."

This difference is illustrated by the following examples: in each pair of examples the first clause is clause (2)—actor oriented conjunct; and the second is clause (4)—goal oriented conjunct. All examples are conjunct in that past time occurs clause initial:

(20) ta ?ahc ha hoo?y nwopy I hit the person (?ahc I, ha hoo?y the person, nwopy l-hit-hit) versus ta ?ahc ha hoo?y swopy the person hit me (swopy he-me-hit).

(21) ta mehc ha hoo?y swopy you hit the person (mehc you, swopy you-hit-hit) versus ta mehc ha hoo?y mwopya the person hit you (mwopya he-you-hit).

(22) ta paat ha hoo?y twopy Peter hit the person (paat Peter, twopy definite-indefinite-hit) versus ta paat ha hoo?y wyopya the person hit Peter (wyopya with metathesis of y- and stem-initial w, indefinite-definite-hit).

(23) ta paat ha hayuhk twopy Peter hit the animal versus ta paat ha hayuhk wyopya the animal hit Peter.

The two coordinates mood and orientation (plus transitivity which distinguishes clauses 5 and 6 versus clauses 1-4) now enable us to distinguish and label the six kernel clauses which are in one-to-one correspondence with the six pronoun series: (1) non-conjunct actor oriented; (2) conjunct actor oriented; (3) non-conjunct goal oriented; (4) conjunct goal oriented; (5) non-conjunct subject oriented; and (6) conjunct subject oriented. In clause (5) and clause (6) which are intransitive, a subject tagmeme is considered to occur in contrast to the actor tagmeme of the transitive clauses (1)-(4).

In the kernel clause system, transformation is of varying relevance to the three coordinates, mood, orientation and transitivity. While actor oriented

12 From the unpublished paper referred to in fn. 3.
and goal oriented clauses are very similar they are not transformations of each other. There is here nothing analogous to the choice possible in English between 'I was hit by Bill' and 'Bill was hit by me.' 'I' outranks 'Bill,' and such a Mixe clause can be only actor oriented. (Mixe passives are a separate consideration and are summarized briefly below.) The kernel system prohibits rather than facilitates transformations between these obviously related structures. Transformation is of some relevance to mood. Thus by permuting a time expression to the fore of a clause the clause may be transformed from non-conjunct to conjunct. Choice of certain introducers determines, however, the choice of mood. Transitive versus intransitive within the kernel clause system of Mixe involves inherent verb classes as well as transformation from one grade of transitivity to the other (chiefly intransitive to transitive).

The remaining features of Mixe clause structure can be outlined only in the most summary fashion: (1) Clause types (1-4) are regularly transformed to clause types (7-10) instrumental clauses (with the same distinction of mood and orientation) by adding an instrumental prefix ta- to the verb and by adding an optional instrumental tagmeme in the clause. The verb mo? give is inherently instrumental without the addition of a prefix (cf. ci? in Zoque ci in SP give—which is inherently ditransitive referential). In the Mixe equivalents of the clauses, 'I cut the person with a machete,' and 'I give the person a gift,' 'I' is actor in both clauses; the 'person' is object, while both 'with a machete' and 'a gift' are instrumental. Objects tend to be animate, and instrumentals inanimate in these instrumental clause types.\(^{13}\) These Mixe clauses (7-10) are somewhat parallel to Zoque and SP ditransitive referentials.

(2) Clause types (7-10) now may be transformed to clauses (11-14) agentive instrumental (with the same distinctions of mood and orientation) by further prefixing tuk agentive before the ta- instrumental found in clauses (7-10) and by adding an optional agentive tagmeme in the clause. Thus a clause 7, instrumental actor oriented non-conjunct, may be transformed to a clause 11, agentive instrumental actor oriented non-conjunct as here exemplified:

\[
\text{24) ha paat macyet y-ta-pootpy ha hoo?y Peter cuts the person with a machete (ha paat the Peter, macyet machete, y-ta-pootpy definite-indefinite-instrumental-cuts, ha hoo?y the person } \Rightarrow \text{?\text{lhc ha paat}
\]

\(^{13}\)Hoogshagen has cited for me an example of instrumental clause where 'the husband hit the wife with the baby' (i.e. picked up the baby and used it to strike the wife). Both situationally and linguistically such use of an animate as an instrument is unusual.
macyet n-tuk-ta-pootpy ha hoo?y I cause Peter to cut the person with a machete.

Here, as in Zoque and SP causative transformations, the original subject becomes the 'causative object' or 'agent' and a new dramatis persona is introduced as subject. Mixe clauses 11-14 are somewhat parallel to the SP tritransitive causative clause type.

The above exemplify an ordered succession along the transitivity coordinate in Mixe from intransitive (clauses 5-6) to transitive (clauses 1-4) to instrumental (clauses 7-10) to agentive instrumental (clauses 11-14). The number of (mentioned or implied) non-predicate nuclear tagmemes (dramatis personae plus instrumental) increases from one to four as in SP.

(3) The sub-system so far sketched comprises the indicative. The voice variable has three values: indicative, imperative and passive. Each of the grades of transitivity—a sub-system of two clauses (5-6) in the intransitive; and sub-systems of four clauses in the transitive (1-4), instrumental (7-10) and agentive instrumental (11-14)—is transformed to one corresponding imperative clause type. This is expressed by Shirley Lyons as follows: 14

"Multiplication of kernel clauses 1-4 by still another constant, Imp (deletion of most clause level tagmemes and stripping the predicate of most of its affixes), gives but one further clause type, the transitive imperative clause (cl. 15). This results from the fact that multiplication by Imp deletes the identifying features of clauses 1-4 (contrasting orientation and contrasting moods). Similarly multiplication of clauses 5-6 . . . by Imp gives an intransitive imperative clause type (cl. 16). Derived clause types cl. 7-10, when multiplied by Imp give the instrumental-imperative clause (cl. 17) while derived clause types (cl. 11-14) times Imp gives the agentive instrumental imperative clause (cl. 18)."

In brief, in each case a sub-system of kernel or derived kernel clauses gives, by deletion transformation, but one resulting type, i.e. the indicative and imperative clauses are in many-to-one relation. By deletion of the subject or actor an imperative clause has at least one less dramatis personae than the corresponding sub-system of the same grade of transitivity.

Four passive clauses (cl. 19-22) constitute the passive system. The non-conjunct transitive clauses, actor oriented (cl. 1) and goal oriented (cl. 3) both become transitive non-conjunct passive (cl. 19) by: (a) prefixing yik-passivizer to the transitive predicate; (b) deleting the subject of the transitive clauses and replacing pronoun set 1 with set 5; and (c) making

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14 From the unpublished paper referred to in fn. 3.
TRANSFORMATIONAL PARAMETERS

Diagram III: Mixe Clause Types

(N = nonconjunct; C = conjunct; AO = actor oriented; GO = goal oriented)
the object of the kernel clause the subject of the transform. Similarly, the
two conjunct transitive clauses (cl. 2 and cl. 4) transform to transitive
conjunct passive (cl. 20) with pronoun set 2 replaced with set 6. Again
the kernels and transforms are in many-to-one relation in that the passive
transformation obliterates the orientation distinction found in the indicative.
In the following (non-conjunct) example cl. 1 ⇒ cl. 19:

(25) ahc ha paat nwohp I hit Peter ⇒ paat yik-wohp Peter was hit.

Similarly, cl. 7 and cl. 9 (instrumental non-conjunct clauses) transform
to instrumental non-conjunct passive (cl. 21) with pronoun set 5; while
cl. 8 and cl. 10 (instrumental conjunct) transform to instrumental conjunct
passive (cl. 22) with set 6.

In diagram III the total system of Mixe verbal clause types is presented
as a field structure in four coordinates. The voice coordinate with three
values is represented as a succession of three columns, the indicative,
imperative, and passive systems. The transitivity coordinate is represented
as a sequence of four rows with the lowest grade of transitivity at the
bottom. Mood and orientation coordinates are both relevant within the
lower three rectangles of the first column. Mood is relevant to the top
rectangle of the first column, and to the third column. Transformational
relationships are indicated by arrows. Numbers indicate clause types. Lack
of internal partition in the rectangles 16-18 indicates the deletion trans-
formations whereby whole sub-systems of clauses are transformed to single
types in the imperative. Lack of vertical partition in the rectangles filled
by 19-20 and 21-22 indicates deletion of the contrastive orientation param-
eter of the indicative in the transformation to the passive.

4. Tagmemics can gain many valuable insights from transformational
grammar. Transformational grammar could learn some things from
tagmemics as well: more explicit functional orientation; use of function-set
notation to clarify transformational rules; and sufficient attention to field
structures to fit transformations into adequate context. From the prejudiced
viewpoint of the writer of this paper, tagmemics is the most adequate expres-
sion of taxonomic linguistics. Transformation grammar is, on the other
hand, the most sophisticated attempt made to date to represent linguistic
structure exhaustively in formal rules. It would be mutually profitable to
both schools to engage in thoughtful dialogue rather than in ideological
warfare.
First Panel: APPROACHES TO LINGUISTIC ANALYSIS

DISCUSSION

Chairman:
Raleigh Morgan, Jr.
Howard University

Panelists:
Emmon W. Bach
University of Texas
Hans Glinz
University of Bonn
Peter N. Ladefoged
University of California, Los Angeles
Robert E. Longacre
Summer Institute of Linguistics

Discussants:
Robert J. Di Pietro
Georgetown University
Edward Blansitt
Georgetown University
William Labov
Columbia University
J. C. Thompson
U. S. Government
Don Nilsen
State University of New York
William O. Dingwall
Georgetown University
Wesley C. Panunzio
Southeast Massachusetts Technological Institute
Rev. Theodore W. Walters, S.J.
Georgetown University
Helmut R. Plant
Cornell University
William C. Stokoe, Jr.
Gallaudet College

59
**MR. DI PIETRO:** I would like to suggest an adjustment to Professor Bach's sixth transformational rule (T 6), where the relative marker is deleted. It seems to me that one would want to include the restriction that Y must contain a noun phrase, NP. The rule would therefore affect sentences like 'The man (whom) I saw at dinner,' without restructuring sentences like 'The man who came to dinner' to 'The man came to dinner,' which does not appear to be a transform of sentences with relative marker plus verb.

**MR. BACH:** I should add a sort of general footnote to what I have presented. These transformational statements are very much oversimplified. T 6, deletion of the relative marker, obviously has to have some sort of restrictions on it to account for English. Perhaps we would state this complexity just for English, with reference to the general form of the deletion transformation. In other words, in the grammar of English there would be a statement that the relative marker can be deleted under such-and-such conditions, and then a reference to the general transformation.

**MR. DI PIETRO:** I want to ask Professor Ladefoged if it would not be accurate to say his figures 3a and 3b convey more information than does the tree diagram in Figure 2, and that Figure 3b says more than 3a since it distinguishes between transitional types, e.g. /a-de/, /ji+ka/ and /na#1/? In a paper I presented at the 1962 winter meeting of the Linguistic Society of America, "A hierarchical arrangement for phonemes," I suggested incorporating both distributional and articulatory (or acoustic) features in the descriptions of the sound systems of languages. I wonder if Professor Ladefoged has given any thought to such a possibility.

**MR. LADEFOGED:** I am trying to distinguish the formal relations that exist between linguistic units from the relations which exist between the units and their substance. I would agree, of course, that the juncture marks may be interpreted as showing a relation to substance, showing the exponent relationship, but so can height in the tree. Because I am trying to make this distinction I don't want to bring in criteria of distribution. Distribution is a matter of how the formal units are related to one another; it is not a matter of how the units are related to substance.

**MR. BLANSITT:** Let me say first that in general I find tagmemics to be the most acceptable theory of grammar that has been proposed. However, except for Crawford's *Totontepec Mixe Phonotagmemics*, I am amazed by the high level of inconsistency that tagmemicists have been able to obtain in

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the establishment of levels. I have been concerned for some time about the clause level of tagmemic descriptions, and I would like to hear Professor Longacre's comments. It is easy to see that Elson and Pickett and others are hard pressed to define 'sentence' once they have defined 'clause.' The principal distinction they make seems to be that between presence and absence of intonation. If it is necessary to have a separate level for intonation, then it would seem necessary to have a level between 'word' and 'phrase' in a language like Spanish, to take care of the word without stress and the word with stress. Pike, in his *Language in Relation to a Unified Theory of Human Behavior*, states that two words coordinated by and—an example might be 'John and Paul'—is a phrase because it contains more than one word. If this reasoning is followed, then 'my older brother and your young cousin' would presumably belong to the next higher level—presumably clause—because it contains more than one phrase. Of course, it does not fit the definition of 'clause,' which has nothing to do with the definition of 'phrase.'

Likewise, I presume the sentence 'If he doesn't come, I'll help you' contains two clauses. However, I consider the sentence 'Otherwise I'll help you' to be the same structure as the former sentence, each containing constituents that I might label, perhaps, 'conditional,' 'subject,' 'predicator,' 'object.' The manifestations of the conditional tagmeme are different, not the sentence structure. In short, I find that tagmemic levels can be made consistent if and only if 'clause' is eliminated as a level.

**MR. LONGACRE:** I think this simply bears testimony to the fact that up until very recently we tagmemicists have not done justice to the sentence as a hierarchical level. I would refer you to the article by John Lind, "Clause and sentence level syntagmemes in Sierra Popoluca," IJAL 30.351 ff., for a very nice handling of sentence level in a tagmemic framework. Lind groups sentences into noncomplex sentences, of which there are three varieties: simple, particle and interrogative sentences; complex sentences, of which there are six types: adversative, general condition, contrary-to-fact condition, action-purpose, effect-cause, and indirect quote sentences; and compound sentences: direct quote, series sequence, and parallel sequence sentences. These sentence-units contain peripheral tagmemes (introducer, sequence, exclamation, vocative) and nuclear tagmemes (statements, counter-statements, protasis, apodosis, etc.), which are tagmemes of an entirely different sort from clause-level tagmemes (predicate, subject, object, location, time). They are very different structures, and I find it helpful to disentangle the two. But we tagmemicists have been a long time getting there, and I think this is what has partly confused many people. In general, the handling of the concept 'hierarchy' needs

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a great deal more attention in the tagmemic framework. In the current issue of Language (January 1965) I have an article, "Some fundamental insights of tagmemics," in which I try to bring the concept of hierarchy into better focus.

**MR. LABOV:** I'd like to address a question to Professor Ladefoged concerning the universal phonetic alphabet. I understand the concept 'universal phonetic alphabet' as an assertion that we can find a universal set of discrete units on the phonetic level—more than a limited set of dimensions. Everyone would agree that human beings use a limited number of articulatory dimensions for producing language. The question is whether or not there are universal limitations on ways of segmenting these dimensions. This is of some importance, I think, because the attack on bi-unique phonemics requires the existence of discrete units at some relatively low level of phonetic transcription. One of the motivations for phonemics, of course, was that phonetic transcription can be a bottomless pit of finer and finer distinctions. I have always understood the International Phonetic Alphabet broad transcription as a kind of alphabetizing, but the narrow transcription as a set of dimensions which, with the use of diacritics, allows an indefinite number of subdivisions, such as height, or voicing, or fronting and backing, as, for example, along the dimension from alveolar to velar on your chart. The question I want to ask is whether there are universal constraints upon the points along such a continuum which can be used for segmentation. I know that there are limitations on the number of different segments; certainly there can not be an indefinite number of segments along this line.

**MR. LADEFOGED:** I used to use the term Universal Phonetic Alphabet specifically as Chomsky uses the term, if I understand him, meaning a universal set of phonetic categories. I then found that people were misunderstanding me and thinking I meant a finite set of symbols, like those in the IPA. For that reason I avoid the term. What I try to do as a phonetician is to find a universal set of phonetic categories. I am interested in how many points there are along the continuum alveolar-to-velar, and my own preliminary statement is that you have to have six states of the feature Place of Articulation from the alveolar region back. There is a finite number of states, and I am prepared to justify this on mathematical grounds, since I have mathematical models from which I can generate sounds. You do not need an infinite number of phonetic categories.

**MR. THOMPSON:** I have a question for Professor Bach. Speaking on the basis of my own idiolect, which at least to some people is substandard, I am drawn to the nonsentences he has produced in 7 and 8 under both I and II. In very closely parallel, if not precisely parallel, situations like 'He was waiting for the bus' and 'I ride to the office on the bus,' I feel perfectly free to produce 'He was waiting for the bus that I ride to the office on.' I think if I were
backed into a corner—by circumstances, not by a linguist—I would fairly freely produce 'He was standing on the bridge that I live in the house by.' I wonder if Professor Bach intends that you can produce nothing from sentences 7 and 8, or whether he prefers the only alternatives I can figure out: 'He was standing on the bridge in the house by which I live.'

MR. BACH: I was trying to illustrate a restriction which has not been completely formulated yet. It involves reaching inside one NP for another NP that is embedded within under certain conditions. These restrictions were first pointed out by Chomsky in the *Preprints of Papers for the Ninth International Congress of Linguists* in 1962.¹ It seemed to me that your sentence about the bus did not illustrate one NP inside another. As for whether or not 'He was standing on the bridge in the house by which I live' is grammatical, I've looked at it so long that I don't know any more. I'm sure that with paper and pencil I could work out wilder sentences which everybody would reject.

MR. NILSEN: I'd like to direct a question to Mr. Bach regarding noun modification. I wonder if he is suggesting or would suggest that one matrix dummy be introduced with every noun phrase. If not, how would the matrix dummies be introduced?

MR. BACH: I follow the suggestions of Katz and Postal, who introduce, in the expansion of the Noun Phrase structure, an optional element REL. From REL and from other symbols like COMP, also in the phrase structure, the matrix dummy symbol is derived. The substitution transformation then replaces this matrix dummy and takes on the analysis of REL from the higher parts of the tree structure. I should point out that Klima and Chomsky have recently suggested doing away with the whole concept of generalized transformation. They introduce directly the sentence symbol S in such contexts and then run through the phrase structure again to provide an expansion of S.

MR. DINGWALL: I'd like to direct three questions to Professor Bach. First, involving the simplicity metric in universals, is it not possible that the desire to add a particular universal to the general linguistic theory might complicate the description of a specific language, and what does one do in this case? Does one seek the largest number of universals at the risk of complicating specific descriptions, or the reverse of this?

Second, concerning the nature of universals: I have seen at least three types of universals stated for language. There is the type which says that for all X, if X is a language, then it has Y. This seems to be the type that Kuroda has

indicated for language in a recent article. The second type is the one introduced by Greenberg, which says that for all X, if X is a language and has Y, then it has Z. This is the implicational type of universal. The third type says that if X is a language it will have some but not all of the following set of characteristics. This seems to be the type of the universal phonetic theory. I wonder which of these three—or perhaps others that are possible—would be included in the metatheory.

Finally, a question on methodology: how would such universals be incorporated into specific grammars? You gave a hint as to how this might be done. Could you elaborate?

MR. BACH: First, how do we avoid biasing our descriptions of particular languages because we are trying to exemplify the existence of certain universals in language? This is an important problem. In general the nicest answer would be something like “We will accept a reformulation in a particular language only if it does not complicate the description of the language.” This would be the strongest position and the one I would take.

Second, the different types of universals: I think all these types have some place in a general linguistic theory. Regarding the last one, that is, statements of the form “If X is a language, then X will have a selection from a certain universal stock,” it is sometimes not realized that this is what is being claimed. If we say that a certain thing is a language universal, this does not necessarily mean that all languages have it—that would be following the first formulation. It could mean only that this is one of a stock of things that languages can have; and we want our theory to have as complete a stock as possible.

Third, how do universal statements enter into the description of a particular language? In describing a particular language, wherever a certain universal transformation or universal concept implying a transformation enters in, it would not be necessary to specify it again. At least theoretically it would not be necessary, but there might be a reference for convenience. You could say, for example, “At this point in the grammar Transformation T 765, listed in Volume 12 of the General Theory, enters in.” This is somewhat like an older sort of description in which at some point there is a reference to, say, the relative clause, and it is taken for granted that the reader knows what a relative clause is. I think we have to make sure we say what a relative clause is before we can make this reference.

MR. PANUNZIO: My question is addressed to Professor Glinz. I wonder if you would make more precise the criteria you use for determining the borderline or demarcation between your morpho-syntax and your nomo-syntax.

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MR. GLINZ: This is sometimes very difficult. I could state what I arrived at with my first substitution tests and rearrangement tests, but my whole method would be too long to expound here. It is not yet put in terms of what you would call taxonomic structure or IC structure. I observe what is needed by my informants to understand a text. For example, let me give you a German sentence. A poem begins *Es tut nichts*. A German reader understands this, first, through its components: *es* 'the child,' *tut* 'works, does,' *nichts* 'nothing'—'He does nothing, He doesn't do anything.' But in its context this sentence is more than that; it is *Es tut nichts, Es schadet nichts, Es macht mir nichts.* All this meaning the reader can not get by taking apart the elements. This is what I call the nomo-layer. I agree that one could multiply these layers at will; there are no clear-cut boundaries. But it is a matter of scientific economy to establish no more categories than are practical to handle. In both layers we have to distinguish the level of phoneme, word, clause, sentence and so forth.

FATHER WALTERS: I'd like to address a question to Dr. Bach. The growing interest in universals in language, spearheaded by Joseph Greenberg, has been paralleled recently by an increased interest in the typology of languages. Stankiewicz in Slavic morphology,¹ Hockett and Kučera in phonology,² and others remind us once again of the morpho-syntactic typology of languages suggested by Sapir forty years ago³ and then quietly laid aside by the linguistic world. It seems to me that transformational grammar, with its ability to reduce complex sentences to basic kernels or propositions and show the transformations involved in producing the complex sentence, readily adapts itself to this approach to universals and the typology of languages.

On the other hand, it seems possible that very real differences between the structures of two languages might be overlooked in the attempt to reduce things to a common pattern, and that one might lose sight of the opposite tendency in linguistics since Bloomfield's time: to analyze each language in its own right and to describe it in its own terms. While I see the value of attempting to establish universals in language through the use of transformations, it seems to me that this is chiefly from the logical or theoretical standpoint, and that from a practical standpoint—from a consideration of language as it is actually used, or of languages as they are to be taught—it is risky. I would like to ask whether this is, in your mind, a purely theoretical and logical approach or whether it does have practical applications.

MR. BACH: Let me say I do think there is a danger in striving for universals and adapting what has been done on one language to another. Certainly we have to work very hard in trying to get more and more languages into our grammars. But it seems to me there is a certain self-corrective device in terms of the simplicity criterion, if it can be worked out in a satisfactory way on the syntactic level and even the semantic level (and this, I think, is still a problem) in some such way as has been suggested for and really been applied on the phonological level. There may be a false dichotomy involved in speaking of describing every language in its own right versus describing every language in terms of some general theory. It seems to me that we can’t describe one language without somehow or other using concepts from a general picture of language. And obviously we can’t find out anything at all about the general nature of language without describing particular languages in terms of some general set of concepts.

MR. PLANT: I have a triple question: Is the analysis of language an art or a science? Who is to decide this? And is it proper or improper to ask this?

MR. GLINZ: I think it is an art and a science, just as medicine is at the same time an art and a science. Language analysis must be an art relying on science, but there are always higher levels you can only reach by handling the art.

MR. STOKOE: I’d like to ask Dr. Ladefoged if the distinction between vowel and consonant is a language universal and, if so, can it be described or discussed at the phonetic level or does it belong to some higher level of language organization?

MR. LADEFOGED: I always use the terms “vowel” and “consonant” in the same way I use “fortis,” “lenis” and other such terms—as labels for groups of phonological units. Therefore they are groups which will classify phonemes together and don’t necessarily have any simple phonetic qualities. I think this kind of statement is quite well put by Pike in his *Phonetics* when he distinguishes between vowel and consonant, on the one hand, and vocoid and contoid, on the other. The latter two have more simple phonetic correlates.
PANEL II

LANGUAGE AND SOCIETY
VARIETIES OF ETHNICITY AND VARIETIES OF LANGUAGE
CONSCIOUSNESS

JOSHUA A. FISHMAN

Yeshiva University

It is one of the puzzles of human behavior that much of what is close at hand, and even basic to one’s own intellective concerns, is sometimes no better known than that which is more distant and peripheral. This puzzle—which philosophers of science and students of behavior have commented upon at length—was strongly underscored at the SSRC’s 1964 Research Seminar on Sociolinguistics (held at Indiana University) when the linguists among us experienced considerable embarrassment in defining languages (as distinct from dialects, registers, patois, parlances, argots, etc.) while the sociologists among us experienced equally great difficulty in defining ethnicity (as distinct from nationality, race, religion, etc.). At the end of one heated discussion a distinguished linguist suggested that “ethnicity” be discarded as an unnecessary and confusing term. This met with the countersuggestion from a sociologist that the concept “a language” be discarded since it was not possible to define it in such a way as to help us answer such a simple question as “how many languages are spoken in area X?” Fortunately, this double suicide pact was never ratified and I for one came away from the summer’s experience convinced that both terms were worthwhile but that both required considerable within-family scrubbing before they would be really fit for presentation before mixed company.

Ethnicity refers most basically to a primordial wholistic guide to human

1 I consider this paper as being a minor supplement to John J. Gumperz’ stimulating article “Types of linguistic communities,” Anthropological Linguistics, 1962, 4, no. 1, 28-40, which I have reprinted in my Readings in the Sociology of Language, The Hague, Mouton, 1965. That paper, like the present one, is concerned with parallelism between social complexity and complexity of linguistic situations. However, while Gumperz spells out this parallelism in some detail, I merely treat the extremes of the continuum which Gumperz presents in order to utilize the obvious contrasts between socio-cultural settings for the purpose of examining the concept of ethnicity.
behavior. Its primary referent is to unimmobilized man, to man living in a limited human and geographic environment uncomplicated by broader causes, loyalties, slogans or ideologies. For mankind under such limited social conditions we find it inappropriate to distinguish between those daily rounds that pertain to or derive from religion, nationality, or social class. As far as we can tell, peasant and tribal societies themselves make no such distinctions "from the inside" and their social structure, as viewed by us "from the outside," reveals no fully differentiated roles corresponding to those of pastor, politician, union leader, etc. Instead, we find a fully integrated set of beliefs, views and behaviors, a "way of life" that is "traditional" in that it invokes timeless custom as the directive guide to all the processes, problems and perspectives of life. This then is the initial and primary meaning of ethnicity: an all-embracing constellation, limited in its contacts with the outside world, limited in its consciousness of self, limited in the internal differentiation or specialization that it recognizes or permits; a "given" that is viewed as no more subject to change than one's kin and one's birthplace; a "given" that operates quite literally with these two differentiations (kinship and birthplace) uppermost in mind; a "given" in which kinship and birthplace completely regulate friendship, worship, and workmanship.

Language, as such, is usually not a conscious factor in the primordial world—except, on occasion, as a boundary-maintaining device—by which I mean to say that it is usually not something separately recognized, valued, loved, protected, cultivated and ideologized. Language norms exist, of course, as do minor variations in code, register or style consonant with the relatively minor distinctions in role relations and in social situations recognized in that world. But these norms of usage are symbolically unencumbered. They are transmitted as are other norms—those of planting and sowing, of dressing and eating—by example and by socialization within the fold, and they change slowly over time, usually without the help or hindrance of special caretakers such as language teachers, grammarians or professional bards. Ethnicity represents the primary guide to behavior in the "classical" folk society \(^2\) and in even more limited tribal societies.

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\(^2\) The validity and utility of this category ("folk society") and the rural-urban continuum from which it is derived have been substantially discussed in the anthropological and sociological literature. For recent critical discussions see: F. Benet, "Sociology uncertain: The ideology of the rural-urban continuum." *Comparative Studies in Sociology and History*, 1963, 6, 1-23; also C. Geertz, "The integrative revolution: Primordial and civil politics in the new states," in his *Old Societies and New States*, (New York, Free Press, 1963), 106-159.
Many societies today exist at or close to this very level of primordial ethnicity and 50 to 100 years ago there were many more such. The bulk of the peasantry of Western Europe, including the peasantries of Britain and France, was not at all far from this level of social organization just a few centuries ago, at the very same time that their rulers and their city-cousins were living on a far different (though related) level of social organization, one that involved a transformation of unconscious primordial ethnicity in the direction of conscious nationality. The bulk of the peasantry of Eastern and Southern Europe was still close to the level of primordial ethnicity half a century ago when mass immigration to the United States from those regions was fully underway. Is it any wonder then that when Polish and Ukranian peasants were approached by census takers toward the end of the 19th century and asked to designate their “nationality” and “religion” they answered that they were “Kaiser’s people” or that they were “local (indigenous) people”? Is it any wonder then that many late 19th and early 20th century immigrants to the United States gave very strange, unreliable (and necessarily incorrect) replies to similar questions put to them by American immigration officers? Is it any wonder that a Hungarian language census of the latter part of the 19th century (conducted and published in Hungarian) reported several thousand claimants of “Ungarisch” mother tongue? Is it any wonder that U.S. mother tongue census data for 1910 and 1920 reports thousands of claimants of “Slavish” and other non-existent or at least inappropriately labeled tongues? Is it any wonder that language statistics for India, Africa, New Guinea and other parts of the world today are confounded by the unawareness of the local populations (and by the ignorance of supposedly sophisticated census takers) as to just what to call the local vernaculars and populaces? It is a fact of primordial ethnicity that not only is there little language consciousness but that the languages employed may have no special designation or no better ones than “mother tongue,” “our language,” “simple language,” “daily language,” “high language,” “book language,” etc., i.e. terms with no group or societal name attached to them.

Let us briefly compare this state of affairs with another which evolved after many centuries in Western Europe but which was subsequently brought into being much more rapidly in other parts of the world as a result of much more rapid and externally pressured social change. Here we find a consciousness of national history, with its heroes and martyrs and national

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3 Further details and discussion of all of these examples may be found in “Ukrainian language maintenance efforts” which constitutes chapter 12 of my Language Loyalty in the United States, The Hague, Mouton, 1965.
missions, national grievances, national ideals. Here we find a distinction between religion and nationality, even when everyone (or almost everyone) is of the same religion (or irreligion). Here we find pride in national literature with its poets and novelists and with its literary schools, periods and styles. Here we find a consciousness of national language, with its avowed beauty, subtlety and precision. Language (like the missions, the heroes, the ideals and the other national treasures to which it is explicitly related) becomes something to love, to fight for, to live for, to die for; something to safeguard, to develop, to enrich, to bring to others who are less fortunate. What has happened to (indeed, where is) primordial ethnicity under these circumstances?

Much has happened—much more than can be spelled out here—to the economy, to the political organization, to the social structure, to the communication possibilities, etc. As a result, there is both a broadening and a fractionization of concern. Instead of the local tribe or the local village, integrated on the basis of kinship and common, direct experience, there is the nation or the national group held together by symbols, instrumental organizations and ideological commitments. The formerly fully overlapping networks of kinship, friendship, worship and workmanship no longer fully overlap. In particular, there is a substantial distance between kinship-friendship networks on the one hand and broader economic and political networks (and allegiances) on the other hand. Not only are there farmers and shoemakers and carpenters and tailors (simple craftsmen—but, even so, far more specialized than the “do it yourself” inhabitants of primordial ethnic communities) but there are newspapers and movements and schools and unions and clubs. All of these provide the new, non-ethnic unity and the new non-ethnic diversity of modern “mobilized” society. As a result, both unity and diversity are organized and institutionalized at a symbolic level substantially beyond the reach of the family and the immediate community. It may still be there, but it is no more meaningful to ask the man in the street in Warsaw, Paris or Rome today to designate his ethnicity than it was to ask his peasant grandfather or great-grandfather to designate his nationality.

Primordial ethnicity is a construct that pertains to an all-encompassing web. This web comes apart and becomes segmentized, bit by bit, during successive periods of socio-cultural change. Its segments become separately transformed, symbolically elaborated and integrated via organizations, ideologies and political institutions. Nationalism—including language loyalty—is made up of the stuff of primordial ethnicity; indeed, it is transformed ethnicity with all of the accoutrements for functioning at a larger
scale of political, social and intellectual activity. However, below the level of conscious symbolic behavior, bits and pieces of primordial ethnicity may still show through. Birthdays in France are not completely governed by the Great Culture of de Gaulle. Wedding ceremonies in Germany are not spelled out in detail by the values or mainsprings of German Kultur. Funerals of common folk in Quebec are French-Canadian in addition to being Catholic and they are somewhat different than Catholic funerals in Madrid, Warsaw, Rome and Mexico City. Even in the United States, after all of the de-ethnization that has marked our development as a nation, ethnicity is the substratum that continues to mark the food preferences, the family occasions, the pastimes, the residential patterns, the religious holidays, and a number of the most significant biological transitions in millions of 100% (and even of 150%) Americans. These daily life patterns are ethnic at base, precisely because they are relatively untransformed, unideological, and unconscious. They provide us—and hundreds of millions of other so-called “enlightened” people throughout the world—with much of the color, the distinctiveness, the comfort, the folksiness, and the continuity in those aspects of daily life that are relatively untouched by national symbols and that are below the level of abstraction, organization and inclusiveness of the phenomena (and at the level of analysis) that most anthropologists refer to by the term “culture.”

* * *

There is a particularly American (including American social science and American intellectual) discomfort and misperception with respect to ethnicity. The discomfort stems from our own de-ethnicized national history relative to the national development of the more traditional nations of the world. The latter developed out of long centuries of transforming ethnicity, both as a result of internal unification and as a result of external demarcation and liberation. We have developed out of more recent, more heterogeneous, and more overtly and initially ideologized roots. Our common traditions are very largely symbolic and procedural rather than substantive in terms of detailed traditions and interactions of daily life. Our position as a “new nation” (in the sense that Lipset uses this term) and our striving toward the “great society” (as this term and concept has recently become popularized) are both necessarily derived from non-ethnic

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roots and experiences. As a result, "ethnicity" is not a phenomenon with which most American intellectuals are really familiar (since they insist on confusing it with "American style" ethnic groups), it is not one in which they are really interested, (for isn't ethnicity "something old fashioned and unenlightened") and it is not one toward which they are sympathetic (since they themselves are "liberated from that kind of thing.")

In addition, ethnicity has suffered in American social science circles because, on the one hand, we feel uncomfortable about the terms "race" and "nationality," and, on the other hand, real "ethnicity" per se, is not something that can be simply asked for on a questionnaire. In sociolinguistic studies we frequently want to determine the background of our subjects in terms of the languages their parents speak or spoke and in terms of the traditions of their current as well as of their childhood homes and neighborhoods. Such information is needed to help us locate and describe particular speech communities, i.e. subjects with particular phonetic, lexical or syntactic features in their verbal repertoires and with particular language skills, attitudes and behaviors more generally. In the early years of this century it was not uncommon to attempt to secure such identifying background information by simply asking for "race." Replies such as "Norwegian," "Mexican," "Jewish (Polish)" etc., were not at all viewed as inappropriate to this query. Subsequently this term came under well-deserved scientific and popular opprobrium. The term "nationality" or "national origin" then came into vogue during the twenties and thirties, but it too ran into problems because by now the phenomenon referred to had become modified and attenuated. What was a third generation American of Norwegian or Germany ancestry to reply to a question concerning national origin? He was American born and so were his parents. Replies undoubtedly varied, some respondents claiming American "nationality" (including some respondents who had themselves arrived here from abroad as children), others claiming a "foreign" national origin (even when they were third generation). As a result neither of these claims, in and of themselves, were sufficiently predictive of language behavior, let alone being predictive of other less structured behaviors.

Finally, today, we find many investigators referring to "ethnic group membership." Unfortunately, on the one hand, this term is not a bit clearer to the man in the street than its predecessors. On the other hand, we are so surrounded by egalitarian convictions and pressures that we feel too embarrassed to talk of "race" (even when Negroes are involved) or to ask about "religion" (even when Catholics are involved) even though these terms are somewhat clearer. We often try to cover an entirely heterogeneous
set of phenomena by referring to "ethnic groups," or to "ethnic back-
grounds" other than entering upon the difficult path of measuring and
describing "ethnicity."  

We must not misinterpret the fact that ethnicity cannot be discovered via
a single item on a form or questionnaire, or the fact that it is not a term
that the man in the street (our informant) understands (or uniformly mis-
understands), or the fact that ethnicity has become a marginal aspect of
modern American (and, more generally, of modern, urban, industrial,
national) life, or the fact that ethnicity varies in the degree of its integration

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6 I have taken care to speak of "ethnicity" rather than of "ethnic groups" both
because "ethnicity" is the more basic (and for Americans the more novel) concept
and because "ethnic group" poses definitional and operational problems of its own.
Ostensibly, ethnic groups are merely groups marked off from others by differences in
ethnicity. However, the question immediately arises as to when a group is a group,
i.e. how much "groupness" (and by whose standards) is required? Does an ethnic
group become and remain an ethnic group when (and as long as) its own members
consider it to be a separate group or when (and as long as) outsiders consider it to be
such a group? Do individuals belong to an ethnic group when they themselves
acknowledge such membership or when others attribute such membership to them?
How is one to treat an aggregate of individuals who acknowledge no ties to each
other, who practice few if any folkway that differ from those of their neighbors, but
whose grandparents were clearly of the same ethnic background and who are viewed
by their neighbors as constituting a group apart, even though they themselves have
no such self-concept or self-aspiration?

The above issues represent genuine concerns in sociology and in social psychology
for they obviously correspond to different social realities. Groups whose members
acknowledge membership and groupness have different kinds and degrees of impact
upon the behaviors of these members than do groups whose existence is externally
rather than internally defined and determined. The consequences of different kinds
and intensities of groupness are constantly being studied, particularly where accultura-
tion, social disorganization and other processes of social change make it impossible to
expect similar values and behaviors from most individuals to whom some common
group-membership label is attached.

However, ethnic groups are of interest to linguists (and to many sociologists as
well), not because of any concern with how groups are formed, dissolved and
reformed, or with their varying impact upon their members, but because of an analytic
need for categories by means of which subjects of predictably different values and
behaviors can be easily located. My point is that such a "nominal" (categorical)
approach to human groups is likely to be productive only in traditional settings where
the groupness of groups is likely to be as real internally as it is recognizable externally.
In other settings, particularly in modern and in modernizing societies, ethnic groups
may not function in this fashion at all. They may have little impact on verbal
behavior precisely because they do not correspond to real speech-and-behavior com-
munities. As a result it becomes doubly appropriate to select and group subjects in
accord with indices of ethnicity rather than in accord with attributed (and—from a
functional point of view—often erroneously attributed) group membership.
and in its relationship with religion and language (to mention only two of its initial primordial constituents) in its various transformations beyond the stage of primordial ethnicity, or the fact that it may therefore, be more or less predictive of other behaviors—we must not misinterpret all of the the foregoing in such ways as to come to disregard the concept itself or the indisputable fact that certain stages of ethnicity have revealed very lawful relationships with certain kinds of language behaviors.

* * *

Perhaps it would be helpful to conclude what has thus far been a theoretical discussion with some empirical examples of how the concept of ethnicity has been utilized and has proved helpful in my own recent research.

Table I indicates how five "ethnic communities" in the United States (defined roughly in accord with Gumperz's "speech community") differed with respect to claimed routes and claimed success in transmitting their non-English mother tongues to their young in 1962.7 A community of Mexican-Americans in San Antonio (Mex) and a community of Puerto Ricans in New York (PR) were the only ones of the five studied that claimed that home use and daily family life were still the major vehicles in this connection. A community of post-World War II Ukrainian immigrants in Newark (UK1) were extremely sensitive to the falling off of language proficiency in their children. They had already begun to rely primarily upon non-religious language schools supported by their "ethnic community" for the transmission of their ethnic mother tongue (EMT), in view of the fact that "home use" had already become ineffective or unreliable after only 15 years of post-war American metropolitan life (this being a much more rapid rate of language shift than had obtained among pre-World War I immigrants to the USA). A community of second generation Ukrainian Americans living in a small Pennsylvania mining town

7 For further details see chapter 8 of Language Loyalty in the United States ("Some community dynamics of language maintenance").

**Table I**

Mother Tongue Maintenance in Five "Ethnic Communities": Approaches and Accomplishments

<table>
<thead>
<tr>
<th>(How) Do the Young Learn the EMT?</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mex</td>
</tr>
<tr>
<td>Home Use</td>
<td>48%</td>
</tr>
<tr>
<td>Lang. Schools</td>
<td>6</td>
</tr>
<tr>
<td>Parochial Schools</td>
<td>0</td>
</tr>
<tr>
<td>Do Not Learn</td>
<td>46</td>
</tr>
</tbody>
</table>
(UK₂) and a community of second generation Franco-Americans in Fall River, Massachusetts (FR₂) had withdrawn one step further from direct control over language maintenance in that they had come to depend primarily on the services of an institution not even entirely within their ethnic community or under its control, namely, the Eastern Orthodox and the Roman Catholic churches respectively. My collaborators and I interpreted this Table (and several other related Tables not shown here) as indicating that our Mexican-American and Puerto Rican samples were still achieving an appreciable degree of language maintenance and, furthermore, that they were doing so primarily by operating within the traditional pale of ethnicity. On the other hand, we considered the second generation Franco-American and Ukrainian samples as being both least successful and most de-ethnicized in their approach. First generation Ukrainian Americans still occupied a middle ground between these two extremes. Their ethnicity (and their language maintenance) was no longer something merely and primarily to be lived but, rather, something to be organized, studied, valued, and appreciated. Other urbanized minorities who have embarked upon this route have found that it permits (indeed it often facilitates) mobility within the host society and, therefore, facilitates even more marginal ethnicity and language maintenance.

The degree to which ethnicity and language maintenance are related is also illustrated in Table II. Here we see that those parishes in the United States that still cling to ethnic mother tongues tend to do so for one set of reasons in connection with sermons and for another set of reasons in connection with their schools for children. Non-English sermons are most often "justified" in very matter of fact terms. It is enough to say that sermons are in the language that the parishioners know best, in the language they speak most often at home and on the street, in the language that they and their parents and grandparents have always spoken, etc. These answers

8 For further details see chapter 6 of Language Loyalty in the United States ("Mother tongue retentiveness in ethnic parishes").

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Sermons</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnic (native language, traditional language)</td>
<td>77%</td>
<td>29%</td>
</tr>
<tr>
<td>Other (beautiful language, practical language, cultural language)</td>
<td>23%</td>
<td>71%</td>
</tr>
</tbody>
</table>
imply that for many adults in these parishes (and it is for the adults that the sermons are intended) language and religion and daily ethnicity are still intimately linked, at least at the level of adult-adult interaction. However at the parent-child and at the child-child interaction levels this is most frequently no longer the case. Most parent-child and child-child interactions have drifted far away from the primordial ethnic context. As a result, children are taught the ethnic mother tongue not "simply" because it is theirs but rather because it is beautiful, cultural, practical, required by higher authorities, etc. Thus we see how language maintenance is differently rationalized (and differently actualized or realized) for generations that differ appreciably in their proximity to or infusion with primordial ethnicity. This difference between first and second generation rationales for language maintenance came up again and again in my study of language maintenance among American immigrants groups—whether rank and file members or intellectual-organizational leaders were at the focus of inquiry.\(^9\)

I have chosen these two examples primarily because they illustrate my conviction that ethnicity is a matter of degree far more basically and far more provocatively than it is an all-or-none matter of kind. Linguists, in borrowing sociological concepts, have all too frequently asked which ethnic groups exist in a particular area (or what is the ethnic background of informant X) rather than inquire of the extent to which ethnicity is apparent in the behaviors of their subjects. The latter, admittedly, is a much harder question to go about answering. It involves a knowledge of the traditional rounds of daily life (as well as a knowledge of the conscious ideological elaborations and symbols that have been derived from as well as grafted upon simple ethnicity); a knowledge of actual observances, actual beliefs, actual friendship patterns, actual communication channels, etc. Ethnicity is a dynamic (I think you are accustomed to saying "a contrastive") phenomenon. It depends upon (interacts with) a larger setting to determine its exact nature at any particular time. It is not a pigeon-hole to which data can be assigned on the basis of superficial or "nominal" criteria.

You cannot be sure whether a certain phonetic range constitutes a phoneme in standard French (or whether "phoneme" is a useful construct) simply by asking an informant to answer "yes" or "no" on a questionnaire. You do not scrap the concept of "phoneme" merely because there are allophones. You do not become disgusted with phonemes simply because they are sometimes morphologically conditioned. You do not ridicule a particular phonemic contrast, let alone the analytic-descriptive construct of

\(^9\) For further details see chapter 7 of *Language Loyalty in the United States* ("Organizational interest in language maintenance").
phonemes, merely because sound shifts occur. Nor do you expect all phonemic distinctions in language X to be present in the speech of all regional groups, all social classes, or on all social occasions entered into by the speakers of language X. Nor, finally, do you surrender your interest in phonemic description simply because sociologists do not understand it (as must be obvious to you from some of the above samples) or because it cannot be explained to them in one or even in a few brief lectures.

I do not know what lies ahead for the concept "ethnicity" as social scientists and linguists gain more experience in working together on socially imbedded language behavior in various parts of the world. On the other hand, I do not know what will happen to the concept "a language" either under those circumstances. However, I am more than willing to come back to Georgetown University 100 years from now (if you will have me) in order to find out.
In his Postulates for a Science of Language, Leonard Bloomfield defines a language as the totality of utterances that can be made in a speech community (1926). His statement emphasizes the view that the sounds and grammatical patterns we study are always abstracted from social activity. They form part of a complex of communicative symbols, produced by members of particular societies interacting in specific social settings in accordance with culturally defined norms of behavior. Few linguists would disagree with this formulation. In asserting that speaking is a form of social interaction, Bloomfield is merely following long established tradition. But so far, such assertions constitute little more than professions of faith. The important contribution of modern linguistic scholars lies in their analysis of verbal signs in terms of their purely linguistic environment. Bloomfield and his followers were able to achieve the explicitness and reliability of statement for which they are justly famous largely because of their insistence that segmentation and classification of verbal forms be based on observable sound. Source data for linguistic analysis were, to be sure, collected from native informants, but once recorded, items were grouped purely on the basis of their formal similarities and differences. Meaning and context were left aside for later consideration.

The last decade has seen a radical break with the basic position of post-Bloomfieldian linguistics. The modern view of grammars as theories of a language rather than as classifications of pre-existing elements has also brought about important changes in the nature of linguistic descriptions. No matter what our opinion regarding these new developments, it is evident that these grammars cover a considerably broader range of phenomena than the earlier formal statements. Along with phonology and morphophonemics, syntax and semantics have once more become an integral part of linguistic descriptions. But the expansion in scope of
linguistic description is also accompanied by new efforts to reassert the independence of formal linguistic analysis. A recent article on semantic theory by Katz and Fodor (1963) makes a major contribution toward the incorporation of semantics into grammar, but in this article the authors also go to great lengths to argue that information about what they call sociophysical settings should be excluded from linguistic descriptions. The semantic theory they envisage is, among other things, capable of dealing with cases of homonymy in sentences such as "The bill is large," where the noun subject may refer either to a bird's beak, a document demanding payment, or to a currency note. On the other hand, the difference in meaning between the objects of the sentences "This store sells horseshoes" and "This store sells alligator shoes" is declared to be outside the scope of linguistics, since knowledge of the difference is a matter of personal experience, and thus not subject to formalization. Despite the increase in the scope of linguistic descriptions, therefore, the new theory continues to make sharp distinctions between grammars and the social context in which utterances are used. Linguists and social scientists operate with similar source data, but the products of the linguists' analysis remain independent entities whose relationship to social facts we are unable to specify in any clear terms.

In work on grammatical theory or internal reconstruction of proto-languages there is, of course, little need to go beyond the ordinary grammatical statement. But claims for the applicability of formal linguistics are usually much broader.

Since the 1940's, for example, the importance of descriptive analysis in the construction of foreign language texts has been emphasized. This emphasis has been justified to a large extent. Contrastive analysis of grammatical systems serves as the basis for drill materials which have been strikingly effective in teaching the ability to produce grammatical sentences in a new language. But it is also fair to say that we have not been completely successful in providing students with the linguistic ability they need to communicate effectively in speech communities where these languages are spoken. Problems of this type are especially severe in Asia, where the learners encounter a radically different cultural environment.

Consider the case of an American who, after completing the conventional language course and having attained reasonable fluency in spoken Hindi, arrives in New Delhi, the capital of India. In his background reading he has most probably learned that Hindi is not the only language spoken there, that many of the educated classes speak English, and that in addition Urdu, Punjabi, and a variety of other local dialects are used.
Since he has grown up in a monolingual community, however, he has little idea of what this multilingual situation implies for day-to-day communication. He therefore tends to be unprepared for the problems he finds.

A typical difficulty, which is the subject of frequent complaints by returning students, concerns the lack of opportunity to use and practice the Hindi that had so laboriously been learned. Wherever the Westerner goes, in hotels, in shops, at parties, in public offices, Indians address him in English. Their English may be barely intelligible but, nevertheless, he is given little opportunity to switch to Hindi. On occasion, when with a group of Indians, he may find his companions talking among themselves in highly abbreviated, idiomatic Hindi, or even in what seems like a mixture of English and Hindi. Nevertheless, they address him only in English, almost as if they were capitalizing on the language barrier in order to exclude him from the intimacy of their in-group relations.

When, in spite of all this, the Westerner does insist on speaking Hindi, he is frequently misunderstood. Some interlocutors will object to the conversational forms he has learned on the grounds that they are Hindustani, sometimes called *khaanaa khaaoo*, “eat your food,” forms. These were used by the English in their relations with Indian servants, but are not regarded as suitable for free India. On the other hand, the Westerner’s attempts to employ expressions such as *maaf kiiijiyee*, “excuse me,” as mere politeness formulas are inappropriate, as Indians use such expressions only to beg forgiveness for a real wrong. Similarly, polite forms of address when used with porters, waiters and similar service personnel, produce awkwardness rather than appreciation.

When questioned about the appropriateness of particular forms, native speakers commonly give conflicting responses. Interminable arguments may arise over the proper form of the subject pronoun and the direct object in sentences such as “he knows it,” in which Hindi has several alternates:

\[
\begin{align*}
\text{wah} & \quad \text{us-koo} \\
\{ \text{woo} \} & \quad \{ \text{us-ee} \}
\end{align*}
\]
\[\text{jaantaa hai} \quad \text{it-to knows.}\]

Since native speakers contradict each other, the Westerner hardly knows where to turn.

In sum, learning appropriate Hindi usage in a modern Indian city is a difficult and frustrating task—almost as difficult as learning the grammar in the first place. Since our textbooks provide no guidance for this task,
the result is that an unusually large proportion of Westerners in India tend after a while to drop their efforts at mastering the vernacular and revert to using English on all occasions. It seems necessary, therefore, at least for the purposes of applied linguistics, to reopen the question of the relationship between linguistic and social facts. More specifically, the question arises: given a grammatical analysis of the languages involved, what additional information can the sociolinguist provide in order to enable the language teacher to give his students the skills they need to communicate effectively in a new society?

This discussion suggests a somewhat different approach to the problem than that taken by Katz and Fodor. They, along with most linguists, tend to be concerned primarily with the cognitive functions of language. They look at language almost exclusively in terms of the way in which objects and concepts are encoded through verbal signs. In language instruction, however, our concern is also with behavior, as it affects language usage. The question, then, is not how to specify the relation between words and sociophysical settings in more detail, but rather, given several alternate ways of formulating a message, which of these is most appropriate according to the social norms of the particular occasion. Contrastive analysis furnishes the relevant grammatical patterns; what we need is information on the social factors which govern the employment of grammatically acceptable alternates.

Modern social anthropologists have formulated a set of concepts for the study of social interaction which seem general enough to apply to linguistic as well as to non-linguistic behavior, and which may be useful for the present discussion. In this framework the actions of individuals within particular settings may be analyzed in terms of their status, i.e., the positions they occupy within the social system, as defined by the rights and duties which the culture assigns to such positions. A person may act as a father, as a friend, as a judge, a customer, etc. In each case his behavior is determined by different norms. The term 'social relationship' may be used to describe interaction between two or more statuses. Every society has a finite number of such relationships, and each carries certain social norms. Some common examples are the father-son, customer-salesman, husband-wife relationships, etc. The daily round of activities in a society can be regarded as segmented into a series of distinct social occasions (Goffman, 1963)—more or less closely defined behavioral routines which are kept separate by members of a society. For example, we eat breakfast, travel to the office, participate in meetings, go out on dates, etc. In each such social occasion only a limited number of social
relationships may occur. Thus, behavioral norms applying to any particular speech event should be predictable from knowledge of the social occasion and of the social relationships involved. What follows is an attempt to apply some of these concepts to problems of language usage.

Basic to the present approach is the assumption, also suggested in the work of scholars such as Brown and Gilman (1960) and Fischer (1958), that language usage reflects the quality of social relationships in particular social occasions. In dealing with linguistic phenomena in this way, we are thus operating in a new "ethnographic" dimension (Hymes, 1964) where linguistic alternates are grouped not in terms of their purely linguistic similarity, but in terms of the norms which govern their usage. We therefore introduce the concept of linguistic or verbal repertoire (Gumperz, 1964 and 1965), defined as the totality of linguistic forms regularly employed within the community in the course of socially significant interaction. Repertoires in turn can be regarded as consisting of speech varieties, each associated with particular kinds of social relationships. In monolingual speech communities, such as we find in the highly industrialized societies of the West, repertoires tend to be co-extensive with the linguists' grammars. The difference is that many of the speech varieties which must be recognized on social grounds are so similar linguistically that they have not been noted in ordinary grammars. In linguistically diverse speech communities like the one we find in Delhi, on the other hand, constituent varieties may require separate though related grammars. Switching among languages in communities of the latter type has the social function similar to stylistic switching in monolingual communities (Rubin, 1961). The linguistic repertoire, therefore, is a general concept which allows us to compare any two communities in terms of the way in which internal speech distribution reflects social structure, regardless of any pre-established criteria of linguistic homogeneity or heterogeneity.

To make formal statements of the relationship between social norms and language choice would, in view of our present limited knowledge, be a formidable task. It would require ethnographies much more detailed than we now have available. For the purpose of language instruction, however, the anthropologists' experience, based on several years of participant observation of interaction in typically Indian small town and village contexts, can at least provide a useful approximation. The Hindi teaching materials prepared at the University of California (Gumperz and Rumery, 1962) attempt to utilize this experience to make at least a beginning in the direction of introducing realism of social context into a language course.
A brief survey of common encounter types found in Indian and American societies reveals some important differences. Dating, parties governed by complete informality of relations, casual gatherings in doctors’ offices or other public locations such as have been described by Hall in his popular *The Silent Language* (1959) are, for example, unknown in India. On the other hand, some common Indian practices have no Western counterpart. Consider, for example, the *puja*, or meditation period, which many Indians observe daily and which involves a half hour or more of silence. A Western visitor arriving during such a period will be completely ignored. If he is familiar with the local custom, he will leave without speaking and return later, or he will sit unobtrusively until the meditation period is over. Lack of acquaintance with such behavior, on the other hand, may cause awkwardness or misunderstanding. In other instances, what on the surface seem like similar encounters carry radically different behavioral norms in the two societies. It is, for example, usually inappropriate in India to discuss an interlocutor’s wife and family in a casual encounter.

A crucial characteristic of Indian society in this respect is the importance placed on the interlocutors’ formal status in most types of interaction. In the bulk of encounters outside the family and close friendship circles individuals are treated as occupying statuses, rather than as individuals. This fact is, as a rule, symbolized by verbal clues. Different greetings and different modes of address are used for Hindus, Muslims, officials, friends, respected elders, etc. A switch from Hindi to Urdu to English may have similar status-marking functions.

The need for such status markers is dropped only in personal interaction among friends. In view of the severe social barriers to interpersonal friendships, however, such friendship relations are considerably more difficult to achieve in Indian society than in Western societies. In a sense, therefore, we can say that the Indian’s persistent attempts to use English in interaction with Westerners serves as a boundary maintenance device marking the social differences involved. This can be overcome only after long periods of close contact.

It might be objected that since selection of linguistic form is ultimately a matter of individual choice, individuals might easily be induced to change their attitudes. Ethnographic experience suggests that this is easier said than done. Behavioral norms such as those referred to here are, as a rule, deeply ingrained since childhood. They form part of unconscious linguistic behavior (Levi-Strauss, 1964) in much the same way that purely linguistic habits do. They are violated only at the risk of considerable
social disapproval, and such violation usually results in extreme conflict on the part of individuals involved. The recent ‘foul speech’ controversy at the University of California in Berkeley, involving the public use of four-letter words, is a case in point. On the surface, all the individuals involved did was to exercise their freedom of choice. But in doing so they violated one of our most firmly held social norms governing conduct at public meetings, exposing themselves thereby to the ire of all concerned. Reactions to the foreigner’s stylistically inappropriate speech in India is, of course, never so extreme, but nevertheless it may cause considerable discomfort.

An important task in constructing a socially realistic conversational sequence is, then, to isolate those encounter types in which a newly arrived Westerner might have occasion to use his Hindi. Since much of the Westerner’s life is spent in Western-type, specially constructed, insulated residential colonies and modern shopping districts which confine him to contact with the Western-trained elite and keep him from intimate contact with typically Indian society, this proves to be not as simple as it may seem. Here the Westerner is restricted to meeting Indians who are bilingual in English and who, for the reasons explained above, tend to have little understanding of his efforts to practice Hindi. When contact with the few monolinguals who penetrate these enclaves becomes necessary, a host of bilingual intermediaries are ever ready to interpret and thus preserve him from direct contact with them.

Special efforts will therefore have to be made to find monolingual Indian settings where these difficulties may be overcome. The Westerner will have to seek out native bazaars or small provincial towns and learn to insist on dealing with monolinguals, avoiding English-speaking intermediaries. Only after considerable length of stay in the country and after acquiring a knowledge of the situational proprieties of language usage, when he has established close friendship ties with Indians, can the Westerner expect to converse freely in Hindi with his interlocutors.

After setting up a list of likely conversational situations and identifying each with respect to their cultural labels, these situations and the statuses of participants can then be graded in terms of their social complexity and in terms of the amount of knowledge of the culture that they require. The Indian bazaar behavior provides a convenient starting point for such an arrangement. In a country as diverse as India, the bazaar provides a neutral meeting place, where distinctions of caste and ethnic background remain suspended in social interaction. All actors become vendors or customers, regardless of their social background. Bazaar language thus
shows relatively simple lexicon and sentence structures and avoids complex patterns of greetings and social introductions and politeness formulas.

Beginning with bazaar situations, it is possible to establish a range of complexity ranging from interaction with uneducated service personnel such as shoemakers and washermen, dealings with drivers of horse- or bicycle-drawn public conveyances, tourist guides in out-of-the-way places, conversations with fellow passengers on trains, to informal friendship relations with social equals and discussions on literary and political topics, towards the end of the scale.

As a next step in the preparation of the text, each encounter was enacted on the scene with a Westerner and actual Indian shopkeepers, service personnel, etc., as actors, and recorded by means of sequence photography. A set of color slides was then selected to represent conversation content somewhat in the way in which comic strip artists represent action. Texts to fit each slide set were then written by linguist-native speakers associated with the project. The conversations served as the basis for pronunciation and grammar drills such as those found in ordinary spoken language texts.

The Berkeley Hindi materials have now been in use for about two years at a number of institutions throughout the country. On the whole, native speakers tend to agree that the texts are appropriate to the social occasions illustrated. Students returning from India have commented on the 'realism' of the course. But the contextual approach also has a number of advantages for the purely linguistic content of the course.

Linguists, for example, have long objected to the educator's preference for word frequency counts, claiming that they are time-consuming and do not necessarily produce significant results. The procedure followed here makes word frequency counts unnecessary. If the encounter type is accurately defined, then the vocabulary which is appropriate to it by definition also has the proper frequency distribution.

More importantly, the association of stylistic variants with visual and social clues provides the student with a natural introduction to the social factors which underlie the style switching which is so important in India. English loans and even entire Indian English slang phrases will appear natural in student conversations. Urdu pronunciations and lexicon will correlate with Muslim dress and gestures, etc. It is even possible to switch styles within the same encounter and change from what Indians call 'chaste' Hindi to Westernized Hindi to Urdu within the same conversation, provided such changes are justified by the status relationship of participants within the encounter. Thus a speaker may use the Urdu tashriif rakhiye
in asking a Muslim to sit down, and then turn to someone with the Hindi equivalent, padhaariyee, for the same message.

The initial assumption regarding the dependence of linguistic form on social setting receives partial confirmation from the fact that in our text grammatical grading of conversational material emerges as a natural consequence of contextual grading. For example, among the important grammatical distinctions between Hindi and English are case-gender-number agreement of nouns and verbs and the verbal tense-mood system. Agreement is more basic to the system since it affects both nouns and verbs. It would be ideal therefore if problems of verb morphology could be left aside while agreement is practiced. The bazaar situations allow us to do just that with natural Hindi conversations, since the only verb forms that appear are the morphologically simple request forms.

In other cases our approach provides criteria for choosing among what would otherwise seem freely alternating modes of expression. Thus sentences like the woo us-koo jaantaa hai 'he knows it,' cited above, alternate with pataa hai (literally, 'knowledge exists'). The former occurs frequently in texts elicited by the usual linguist-informant interview method. With its subject-object-verb structure it is a relatively close translation equivalent of English and hence it might seem natural on grounds of ease of learning to emphasize it in drill materials. The latter expression shows a noun plus auxiliary type predication, somewhat more difficult for Americans to learn. It is, however, very common in informal Hindi, and furthermore has close parallels in local dialects and other South Asian languages. In general, wherever alternate Hindi expressions are possible, contextual eliciting tends to select those alternates with more direct translation equivalents in other Indian languages, whereas linguist-informant eliciting technique yields a higher proportion of English-like constructions.

Our examination of social interaction has revealed some important differences between behavioral norms in the American and North Indian speech communities. Further work in South Indian, Dravidian-speaking speech communities seems to indicate that behavioral norms there are quite similar to those in North India. Thus Tamil-speaking informants, when shown slide sequences taken in North India, seem to have no difficulty in producing natural conversations to fit these sequences. Indications are, therefore, that while the contextual approach requires considerable additional work, once an analysis is made it may at least in part be transferable to other speech communities within that culture area, resulting in a considerable gain in generality.
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ON THE MECHANISM OF LINGUISTIC CHANGE

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INTRODUCTION

This paper outlines the approaches to the explanation of linguistic change which are being followed in our current research within the context of the speech community. It is now clear that many theoretical problems of linguistic structure cannot be resolved without data from the speech community; here I will focus on the converse proposition—that linguistic change cannot be explained by arguments drawn from purely internal relations within the system, even if external, sociolinguistic relations are recognized as additional conditioning factors. In the mechanism of linguistic changes which we have observed, the two sets of relations are interlocked in a systematic way.

The investigations which form the basis for the present discussion are studies of linguistic change on the island of Martha's Vineyard, and in New York City; the principal focus will be on the process of sound change. The chief techniques used in this research have been described in several previous papers and publications, along with a certain amount of the data and the findings. The data to be presented here may be considered repre-

1 This point of view is developed in detail in W. Labov, "The aims of sociolinguistic research," to appear in the report of the Sociolinguistics Seminar held at Bloomington, Indiana, in the summer of 1964, under the auspices of the Social Science Research Council.

sentative of a much larger set of facts and correlations derived from these studies.

The problems of linguistic evolution. Despite the achievements of 19th century historical linguistics, many avenues to the study of linguistic change remain unexplored. In 1905, Meillet noted that all of the laws of linguistic history that had been discovered were merely possibilities:

... it remains for us to discover the variables which permit or incite the possibilities thus recognized.

The problem as we face it today is precisely that which Meillet outlined sixty years ago, for little progress has been made in ascertaining the empirical factors which condition historical change. The chief problems of linguistic evolution might be summarized as five questions:

1. Is there an over-all direction of linguistic evolution?
2. What are the universal constraints upon linguistic change?
3. What are the causes of the continual origination of new linguistic changes?
4. By what mechanism do changes proceed?
5. Is there an adaptive function to linguistic evolution?

One approach to linguistic evolution is to study changes completed in the past. This has of course been the major strategy of historical linguistics, and it is the only possible approach to the first two questions—the direction of linguistic evolution, and the universal constraints upon change. On the other hand, the questions of the mechanism of change, the inciting causes of change, and the adaptive functions of change, are best analyzed by studying in detail linguistic changes in progress. The mechanism of linguistic change will be the chief topic of the discussion to follow; however, many of the conclusions will plainly be relevant to the questions of inciting causes and adaptive functions of change, and it will be apparent that more

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5 Linguistique historique et linguistique générale, [Paris, 1921], p. 16.

4 There has actually been a retrograde movement in this respect, in the sense that treatments of linguistic change which are essentially ahistorical have become popular. Chronological detail is deliberately set aside in such articles as H. Pilch, “The rise of the American English vowel pattern,” Word 11:57-93 [1955], and M. Halle, “Phonology in a generative grammar,” Word 18:54-72 [1962].

3 This question is all the more puzzling when we contrast linguistic with biological evolution. It is difficult to discuss the evolution of the plant and animal kingdoms without some reference to adaptation to various environments. But what conceivable adaptive function is served by the efflorescence of the Indo-European family? On this topic, see “The aims of sociolinguistic research,” cited above, and D. Hymes, “Functions of speech: An evolutionary approach,” in Gruber, F. C. [ed.], Anthropology and Education [Philadelphia, 1961].
complete answers to these questions will require methods similar to those used here.

An essential presupposition of this line of research is a uniformitarian doctrine: that is, the claim that the same mechanisms which operated to produce the large scale changes of the past may be observed operating in the current changes taking place around us.

A STRATEGY FOR THE STUDY OF LINGUISTIC CHANGES IN PROGRESS

Although answers to the three questions given above are the ultimate goals of our current research, they do not represent the actual strategy used. For the empirical study of changes in progress, the task can be sub-divided into three separate problems which jointly serve to answer the questions raised above.

[1] The transition problem is to find the route by which one stage of a linguistic change has evolved from an earlier stage. We wish to trace enough of the intervening stages so that we can eliminate all but one of the major alternatives. Thus questions of the regularity of sound change, of grammatical influence on sound change, of “push chains” versus “pull chains,” of steady movement versus sudden and discontinuous shifts, are all aspects of the transition problem.

[2] The embedding problem is to find the continuous matrix of social and linguistic behavior in which the linguistic change is carried. The principal route to the solution is through the discovery of correlations between elements of the linguistic system, and between those elements and the non-linguistic system of social behavior. The correlations are established by strong proof of concomitant variation: that is, by showing that a small change in the independent variable is regularly accompanied by a change of the linguistic variable in a predictable direction.6

[3] The evaluation problem is to find the subjective [or latent] correlates of the objective [or manifest] changes which have been observed. The

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6 The concept of the linguistic variable is that developed in “The linguistic variable as a structural unit,” paper given before the Washington, D.C. Linguistics Club in October, 1964. The definition of such a variable amounts to an empirical assertion of co-variation, within or without the linguistic system. It appears that the fundamental difference between an explanation of a linguistic change, and a description, is that a description makes no such assertion. In terms of a description of change, such as that provided by Halle, op. cit., there is no greater probability of the change taking place in the observed direction, as in the reverse direction. Note that the embedding problem is presented here as a single problem, despite the fact that there are two distinct aspects: correlations within the linguistic system, and with elements outside the system. The main body of this paper provides justification for this decision.
indirect approach to this problem correlates the general attitudes and aspirations of the informants with their linguistic behavior. The more direct approach is to measure the unconscious subjective reactions of the informants to values of the linguistic variable itself.

With tentative solutions to these problems in hand, it would be possible to provide an explanation of a linguistic change which answers the three questions of inciting cause, mechanism, and adaptive function. As in any other investigation, the value of an explanation rises in relation to its generality, but only to the extent that it rests upon a foundation of reliable and reproducible evidence.

THE OBSERVATION OF SOUND CHANGE

The simplest data that will establish the existence of a linguistic change is a set of observations of two successive generations of speakers—generations of comparable social characteristics which represent stages in the evolution of the same speech community. Hermann obtained such data at Charmey in 1929, by developing Gauchat's original observations of 1899.7 We have such data for Martha's Vineyard, adding the 1961 observations to the 1933 data of the Linguistic Atlas.8 For New York City, we add the current data of 1963 to the Linguistic Atlas data of 1940; in addition, we have many other reports, including the excellent observations of Babbitt in 1896 to add further time depth to our analysis.9

Solutions to the transition problem proposed here will depend upon close analysis of the distribution of linguistic forms in apparent time—that is, along the dimension formed by the age groups of the present population. Such an analysis is possible only because the original simple description of change in real time enables us to distinguish age-grading in the present population from the effects of linguistic change.10

The evidence obtained in the research reported here indicates that the regular process of sound change can be isolated and recorded by observations across two generations. This process is characterized by a rapid

8 H. Kurath et al., Linguistic Atlas of New England [Providence, 1941].
development of some units of a phonetic sub-system, while other units remain relatively constant. It affects word classes as a whole, rather than individual words: yet these classes may be defined by a variety of conditions, morphophonemic and grammatical as well as phonetic. It is regular, but more in the outcome than in its inception or its development. Furthermore, it appears that the process of sound change is not an autonomous movement within the confines of a linguistic system, but rather a complex response to many aspects of human behavior.

Some comment is required on the possibility of observing regular sound change, since arguments inherited from the neogrammarian controversy have impeded the progress of empirical research in this area. The inheritors of the neogrammarian tradition, who should be most interested in the empirical study of regular change in progress, have abandoned the arena of meaningful research in favor of abstract and speculative arguments. Indeed, Bloomfield and Hockett have maintained that phonetic change cannot in principle be observed by any of the techniques currently available.\(^1\) Hockett has proceeded to identify sound change with a level of random fluctuations in the action of the articulatory apparatus, without any inherent direction, a drift of the articulatory target which has no cognitive, expressive or social significance.\(^2\) All of the empirical observations of change in progress which have been reported are explained as the results of a complex process of borrowing, and are relegated to a type of linguistic behavior known as the fluctuation or conflict of forms. No claims are made for the regularity of this process, and so the basic tenet of the regularity of sound change has been deprived of all empirical significance. Furthermore, the changes which actually are observed are regarded as unsystematic phenomena, to be discussed with anecdotal evidence.

\(^1\) Language [New York, 1933], p. 347, 365; A Course in Modern Linguistics [New York, 1958], p. 439, 444. Hockett writes: "No one has yet observed sound change: we have only been able to detect it via its consequences. We shall see later that a more nearly direct observation would be theoretically possible, if impractical, but any ostensible report of such an observation so far must be discredited." His theoretical proposal is that "over a period of fifty years we made, each month, a thousand accurate acoustic records ... all from the members of a tight-knit community." The suggestion to multiply the data in this way is not necessarily helpful, as the experience of sociological survey analysts has shown: for relatively small numbers are needed to measure change in a population if the bias of selection is eliminated or minimized. Otherwise, we merely multiply the errors of measurement.

\(^2\) According to Hockett, the variables responsible for sound change include "the amount of moisture in the throat, nose and mouth of the speaker, random currents in his central nervous system, muscular tics ... the condition of the hearer's outer ear [presence of wax or dirt] ..." Op. cit., pp. 443-444.
subject to forces "quite outside the linguist's reach," factors which "elude our grasp," fluctuations "beyond our powers" to record.¹³

The evidence of current research suggests that this retreat was premature, that the regular process of sound change can be observed by empirical methods. The refinements in methodology called for are not the mechanical elaborations suggested by the writers cited above; for the mere multiplication of data only confounds analysis and perpetuates the bias of selection. It is rigor in the analysis of a population and in the selection of informants which is required. Furthermore, we need ingenuity in the resolution of stylistic variation, to go beyond the sterile method of endless dissection into idiolects. With such techniques, we find that regularity emerges where only confusion was seen before. Random fluctuations in articulation can certainly be found: indeed, this is the level of "noise" which prevents us from predicting the form of every utterance which our informants will make. But it would be an error to ascribe a major role to such fluctuations in the economy of linguistic change. The forces which direct the observed changes appear to be of an entirely different order of magnitude, and the changes take place much more rapidly than any process of random drift could account for.¹⁴

A single example of a sound change recently observed will be used to illustrate the general approach to solving the transition, embedding and evaluation problems. This example is one of the simplest cases—that of the centralization of (aw) on Martha's Vineyard. In the development of this case, some new evidence will be presented on the mechanism of sound changes which has not been published before.

THE CENTRALIZATION OF (AW) ON MARTHA'S VINEYARD

We begin with a clear-cut case for the existence of a linguistic change from observations in real time. In 1933, Guy Lowman found no more than the barest trace of centralization of /aw/; the significant variation observed was the fronting of /aw/ from [au] to [æu]. In 1961, a comparable set of older eighth generation descendants of Yankee settlers

¹³ Bloomfield, op. cit., pp. 343-368.
¹⁴ Thus the following table contrasts the two points of view:

<table>
<thead>
<tr>
<th>Neogrammarians:</th>
<th>sound change</th>
<th>fluctuation of forms</th>
<th>ultimate regularity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present discussion:</td>
<td>sub-linguistic fluctuations</td>
<td>sound change</td>
<td>ultimate regularity</td>
</tr>
</tbody>
</table>
from the same villages showed a very pronounced centralization of /aw/—now clearly the variable (aw).\textsuperscript{15}

The transition problem is studied through a detailed examination of the distribution of forms through apparent time—that is, through the various age levels in the present population.\textsuperscript{16} The first step in the analysis is to construct a quantitative index for discrete values of the variable: \textsuperscript{17}

\[
\begin{align*}
\text{aw-0} & \quad [\text{AU}] \\
\text{aw-1} & \quad [\text{a-Lu}] \\
\text{aw-2} & \quad [\text{e-Lu}] \\
\text{aw-3} & \quad [\text{e-Lu}]
\end{align*}
\]

The index of centralization was constructed from this scale by averaging the numerical values assigned to each variant. Thus (aw)-00 would mean no centralization at all, while (aw)-3.00 would mean consistent centralization at the level of [e-Lu]. This index was applied to interviews with 69 informants by rating each of the words in which (aw) occurred. The first approach to the transition problem can then be made by correlating average (aw) index scores for these interviews with the age level of the speakers. The first three columns of Table 1 show a regular correlation, in which the centralization index rises regularly for four successive age levels.

The over-all tendency of Table 1 represents an amalgamation of many different types of speakers and many different trends in the use of (aw). Figure 1 presents a more detailed analysis of the transition problem for a

\textsuperscript{15} In the notation used here, parentheses indicate the linguistic variable, while slashes indicate bi-unique phonemes and brackets phonetic notation as usual. Thus (aw) represents the variable in general; (aw-2) is a particular value of the variable; (aw)-22 is an average index score for the variable.

\textsuperscript{16} In this case, as in many others, the original sample was too small to allow us to study differences in age levels; only four informants were chosen on Martha's Vineyard in 1933.

\textsuperscript{17} The original impressionistic scale had six levels. Instrumental measurements of a sample of these ratings indicated that four levels could be distinguished with a high degree of conformity to formant positions. See "The social motivation of a sound change," pp. 286-287.

\begin{table}[h]
\centering
\caption{Centralization indexes by age level}
\begin{tabular}{llll}
\textbf{Generation} & \textbf{Age Level} & (aw)- & (ai)- \\
Ia & over 75 & 0.22 & 0.25 \\
Ib & 61-75 & 0.37 & 0.35 \\
IIa & 46-60 & 0.44 & 0.62 \\
IIb & 31-45 & 0.88 & 0.81 \\
\end{tabular}
\end{table}
FIGURE 1

Stages in the centralization of (aw) on Martha's Vineyard, Massachusetts
critical sub-group. Here are displayed the percentage distribution of lexical items for eight individuals from 92 to 31 years of age. The horizontal axes show the four coded levels of the variable (aw). The vertical axes are the percentages of lexical items used with each variant. The vocabulary is broken into two sections that are tabulated separately: the solid line represents words in which (aw) is followed by a voiceless obstruent, as in *out, house, about, mouth*; the broken line represents all other words [and principally those ending in a nasal, as in *town, found, or with no consonant final, as in now, how, etc.*] 18

The first diagram in Figure 1 is not that of an individual, but shows the composite results for the four Linguistic Atlas informants interviewed in 1933. They show only the barest trace of centralization. The second diagram, 1-b, is that of the oldest informant of 1961, a man 92 years old. The average age of the Atlas informants was 65 years; Mr. H. H. Sr. would have been 64 years old in 1933, and so he is of the same age group. His centralization profile is quite similar to that of the Atlas informants in 1-a. In Figure 1-c, we have an 87-year-old woman who shows only a slight increase in centralization. Figure 1-d, Mr. E. M., 83 years old, indicates a small but distinct increase in the occurrence of variant (aw-2). Mr. H. H. Jr., in 1-e, is considerably younger; he is 61 years old, the first representative of the next generation, since he is the son of Mr. H. H. Sr. Here we have a marked increase in centralization, with both classes of words centered about a norm of (aw-1). In Figure 1-f, Mr. D. P., 57 years old, shows a distinct difference between words ending in voiceless obstruents and all others; the first are now centered about a norm of (aw-2), while the second group is concentrated at (aw-1). This process is carried further in the speech of Mr. P. N., 52 years old, who shows perfect complementary distribution. Before voiceless obstruents, /aw/ has an allophone which is almost always (aw-2), while before other terminals it is usually uncentralized. And at this point, there is no overlap in the distribution. Finally, in 1-h, the most extreme case of centralization, we see an even sharper separation: this is Mr. E. P., 31 years old, the son of Mr. D. P. in 1-f.

On the right hand side of Figure 1 are the figures for the actual numbers of lexical items observed, and the composite index scores for each of the eight cases. It may be noted that (aw) is only one-third as frequent as (ay), and the regularity which appears here does not require a vast corpus

18 The phonetic conditioning was actually much more complex than this, and both following and preceding consonants are involved. *Ibid.*, p. 290.
of observations. The regularity emerges through the controlled selection of informants, methods of elicitation, and of recording the data.

The eight diagrams of Figure 1 represent the most homogeneous type of population. All of the speakers are Yankee descendants of the original settlers of the island, all are interrelated, many from the same families, with similar attitudes towards the island. All had rural upbringing, and worked as carpenters or fishermen, with one exception. Thus the continuous development of centralization represents the very model of a neogrammarian sound change, accomplished within two generations.

The embedding problem was first approached by correlating the centralization of the obviously related variables (ay) and (aw)—that is, the change of (aw) was embedded in the system of upgliding diphthongs. The Atlas records indicate a moderate degree of centralization in the 1930's, so that we know that the centralized forms of (ay) preceded the rise of (aw). The fourth column of Table 1 shows a close correlation of the two variables, with (ay) slightly in the lead at first, but (aw) becoming more dominant at the end. This pattern was repeated when the variables were correlated with a number of independent extra-linguistic factors: the occupation, education and geographic location of the speaker, and most importantly, the ethnic group to which he belonged. The significant differences in the transition rates of these various sub-groups allowed the following statement of a solution to the embedding problem:

The centralization of (aw) was part of a more general change which began with the centralization of (ay). This initial change proceeded from a moderate level of (ay) centralization which was probably a regional and recessive trait inherited from the original settlers of the island. The increase of centralization of (ay) began in a rural community of Yankee fishermen descended directly from these original settlers. From there, it spread outward to speakers of the same ethnic group in other occupations and in other communities. The structurally symmetrical variable (aw) began to show similar tendencies early in this process. The change was also adopted by the neighboring Indian group at Gay Head, and a generation later, spread to the large Portuguese group in the more settled sections of the island. In these two ethnic groups, centralization of (aw) overtook and surpassed centralization of (ay).

Figure 1 would lead us to believe that the phonetic environment of (aw) was a powerful factor in the initiation of the sound change. Moreover, we can observe that the centralization of (ay) also showed a strong tendency towards phonetic conditioning in Generation Ib, similar to that
displayed for (aw) in Generation IIb.\textsuperscript{19} However, phonetic restriction on (ay) was overridden in the following generation, so that Generation II shows a uniform norm for (ay) in all phonetic environments. This development would support the view that phonetic conditioning does not play a significant role as an inciting cause of the centralization of (aw), but acts rather as a conditioning factor which may be eliminated by further change.

On Martha's Vineyard, the \textit{evaluation problem} was approached by analyzing a number of clues to the subjective attitudes towards island life which appeared in the course of the interviews. Attitudes towards summer tourists, towards unemployment insurance, towards work on the mainland, towards other occupational and ethnic groups, were correlated with data obtained from community leaders and historical records, and then with the linguistic variables. It appeared that the rise of (aw) was correlated with the successive entry into the main stream of island life of groups that had previously been partially excluded. It was concluded that a social value had been [more or less arbitrarily] associated with the centralization of (ay) and (aw), and that social value could best be expressed as "native status as a Vineyarder." Thus to the extent that an individual felt able to claim and maintain status as a native Vineyarder, he adopted increasing centralization of (ay) and (aw). Sons who had tried to earn a living on the mainland, and afterwards returned to the island, developed an even higher degree of centralization than their fathers had used. But to the extent that a Vineyarder abandoned his claim to stay on the island and earn his living there, he also abandoned centralization and returned to the standard uncentralized forms.

The solution to the evaluation problem is a statement of the social significance of the changed form—that is, the function which is the direct equivalent on the non-cognitive level of the meaning of the form on the cognitive level. In the developments described here, the cognitive function of /ay/ and /aw/ has remained constant. It is plain that the non-cognitive functions which are carried by these phonological elements are the essential factors in the mechanism of the change. This conclusion can be generalized to many other instances of more complex changes, in which the net result is a radical change of cognitive function. The sound change observed on Martha's Vineyard did not produce phonemic change, in which units defined by cognitive function were merged or split. But many of the

\textsuperscript{19} This phonetic conditioning is more in the nature of a continuum than that for (aw). On page 289 of "The social motivation of a sound change" is given the complete data for a speaker of the same age and background as Mr. H. H. Jr. of Figure 1.
changes in progress that have been observed in New York City did produce such mergers and splits on the level of the bi-unique phoneme. One such change is the raising of (oh), the vowel of *law, talk, off, more,* etc., which will serve to illustrate many aspects of the mechanism of linguistic change not relevant to the simpler example on Martha's Vineyard.

THE RAISING OF (OH) IN NEW YORK CITY

It was not possible to make a direct attack upon the transition problem in New York City. Although the records of the Linguistic Atlas showed sporadic raising of (oh) at a fairly low level, the Atlas informants in New York City were not selected systematically enough so that we could construct a comparable sample in 1963. Furthermore, an over-all comparison of the usage of this variable by older and younger speakers did not show the clear-cut and regular progression which we saw for (aw) on Martha's Vineyard. It was suspected that the reason for this difficulty was the greater tendency towards stylistic variation among New Yorkers, and the heterogeneity of the population in terms of socio-economic class and ethnic membership. Therefore it was necessary to attack the embedding problem first, before the transition problem.

The variable (oh) is a part of the system of long and ingliding vowels in the vernacular pattern of New York City speech which is essentially r-less: that is, where final and pre-consonantal /r/ does not occur as a consonantal glide. Thus (oh) occurs in the word class of *law, talk, broad, caught, off,* and *more, four, board,* etc. To establish a quantifiable index, five variants were coded as follows:

- (oh-1) [uː ʰ]
- (oh-2) [oː ʰ]
- (oh-3) [oː ʰ]
- (oh-4) [ɔː]
- (oh-5) [ɔː]

The far-reaching shifts and mergers observed in the long and ingliding vowel system of New York City, to be discussed below, do not affect the morphophonemic system. The detailed distribution of the variables in the process of change appear to provide evidence for the systematic status of the bi-unique phoneme. See “The aims of sociolinguistic research” cited above for discussion.

Convenience was apparently a greater factor in the selection of Atlas informants in New York than on Martha’s Vineyard. The great bulk of the New York population was poorly represented in the sample, including the working class and lower middle class. The old-family stock used for Atlas interviews represents only a very small fraction of the ethnic composition of the city, at most one or two per cent.

The codification of these variants can be assisted by the use of some modal reference points. (oh-1) is at the level of the vowel of [r-less] sure; (oh-3) is the
The (oh) index score was established by taking the numerical average of the variants recorded in any given portion of speech, and multiplying by ten. Thus the consistent use of (oh-2) would give a score of (oh)-20, and a consistent use of (oh-4), a score of (oh)-40.

A method was developed in the New York City study for isolating a range of well-defined contextual styles in the speech of individual informants, and average index scores were determined for each style. A systematic approach to the sampling of a large urban population was utilized, embodying the techniques of survey methodology, and average index scores for various sub-groups of the sample population were determined for each style. The embedding problem was then attacked by correlating the five chief linguistic variables each with each other, and with other elements of the linguistic system, with the level of stylistic variation in which they were recorded, and with the independent variables of socio-economic class [occupation, education and income], sex, ethnic group and age level.\textsuperscript{23}

Correlations of (oh) with socio-economic class revealed that the irregular distribution of (oh) in the population as a whole was partly due to the fact that the change had not yet affected all social classes. Figure 2 is a style stratification diagram for (oh) in which the transition state of this variable can be seen in synchronic section. The horizontal axis represents the ten socio-economic levels used for this analysis, grouped informally into lower class, working class, lower middle class, and upper middle class. The vertical axis represents the average (oh) index scores: the lower values of (oh) are at the top, representing the higher, closer vowels, and the higher values of (oh) are at the bottom, indicating more open vowels. The index scores for each socio-economic group are entered on the diagram for each stylistic context, and values for the same style are connected along straight lines.

Figure 2 indicates that (oh) is not a significant variable for lower class speakers, who do not use particularly high values of this vowel and show no stylistic stratification at all. Working class speakers show a recent stage in the raising of (oh): very high vowels in casual speech, but otherwise very little stratification in the more formal styles, and little tendency towards the extreme, hypercorrect (oh-4) and (oh-5). But lower middle class speakers show the most developed state of the sound level of the most common Northern vowel in [r-pronouncing] or, nor; (oh-4) at cardinal I.P.A. [ɔ]; (oh-5) at the level of Eastern New England cot.

\textsuperscript{23} The embedding problem is treated here as one problem, not two, in accordance with the general logic of this paper.
change, with high values in casual speech, and extreme stylistic stratification. Finally, the upper middle class group is more moderate in all respects than the lower middle class, still retaining the pattern of stylistic stratification.

The ethnic group membership of New York City speakers is even more relevant to their use of (oh) than socio-economic class. Figure 3 shows the differences between speakers of Jewish and Italian background in the treatment of (oh) in casual speech. For all but the upper middle class, the Jewish group uses higher levels of (oh). Table 2 shows that both Jewish and Italian speakers have participated in the raising of (oh), but the increase seems to have reached its maximum early for the Jewish

The Negro group does not show any significant response to the variable (oh), and shows a constant index of performance at a low level. As noted above, the lower class in general is similarly indifferent to (oh). Table 2 shows Jewish and Italian ethnic groups only, with the lower class excluded.
group, and later for the Italian group. A separate solution for the transition problem is therefore required for each ethnic group.

The transition problem for the Italian group can be seen analyzed in Figure 4. The procession of values is not absolutely regular, since socio-economic membership, sex, and other factors affect the values; nevertheless, there is a steady upward movement from the oldest speakers on the right to the youngest speakers on the left. Within the present sample of New York City speakers, this is the finest resolution of the transition problem which can be obtained.\textsuperscript{25}

\textsuperscript{25} Figure 4 includes Italian informants who refused the original interview, and whose speech patterns were sampled by the television interview, as described in Appendix D of The Social Stratification of English in New York City cited above.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure3.png}
\caption{Class stratification diagram for (oh) by ethnic group in casual speech}
\end{figure}

\begin{table}
\centering
\begin{tabular}{|c|c|c|}
\hline
Age & Jews & Italians \\
\hline
8-19 & 17 & 18 \\
20-35 & 18 & 18 \\
36-49 & 17 & 20 \\
50-59 & 15 & 20 \\
60- & 25 & 30 \\
\hline
\end{tabular}
\caption{Average (oh) Indexes by Age Level and Ethnic Group in Casual Speech}
\end{table}
The embedding problem for (oh) requires an intricate set of correlations with other elements in the linguistic system, in addition to the extra-linguistic correlations exemplified above. We find that (oh) is firmly embedded within the sub-system of long and ingliding vowels, and also related structurally to other vowel sub-systems. Quantitative studies of these relations fall into five sets:

[1] There is a strong correlation between the height of (oh) and the height of the corresponding front ingliding vowel (eh) in the word class of bad, ask, dance, etc. This variable originated as a raising of /æh/, but early in the evolution of New York City speech it merged with /eh/, the word class of bare, bared, where, etc. The relation between (eh) and (oh) is strikingly parallel to that of (ay) and (aw) on Martha's Vineyard. The front vowel was raised first, as early as the 1890's in New York, and the back vowel followed. Like (aw) on Martha's Vineyard, the variable (oh) became specialized in the usage of a particular ethnic group: to the extent that the Italian group shows higher use of (eh) in casual speech,
the Jewish group shows higher values of (oh), until the difference is largely resolved in the youngest age level by merger of (eh) and /ih/, (oh) and /uh/.

[2] The variable (oh) also has close relations with the higher in-gliding vowel /uh/. As we observe higher and higher variants of (oh) in the casual speech of the younger informants, it becomes apparent that a merger of (oh) and /uh/ is imminent. This merger has undoubtedly occurred in the youngest speakers in our sample from the working class and lower middle class. In fact, we have many informants who show the merger even in the most formal styles, in the reading of isolated word lists, and we can conclude a fortiori that the merger exists in casual speech. Close study of the variants of their casual speech shows the merger as an accomplished fact: though most listeners who are not conscious of the overlap will hear beer as higher than bear, it is in fact indistinguishable out of context.

[3] There is also a close correlation between (oh) and /ah/, the long tense vowel heard in guard, father, car, etc. The variable (ah) represents the choice of back or center options for the subclasses of hot, heart, hod and hard. High values of (oh) are correlated with low back positions of heart, hod and hard [with the last two generally homonymous]; lower values of (oh) are correlated with low center positions of the vowels in these word classes. This correlation is independent of socio-economic class or ethnic group. Whereas (oh) is firmly embedded in the socio-linguistic structure of the speech community, /ah/ is not. As a linguistic variable, (ah) seems to be a function only of the height of (oh): a purely internal variable.26

[4] (oh) is also related to the variable height of the vowel in boy, coil, etc., (oy) in the front up-gliding system. The height of the vowels in coil and call seem to vary directly together in casual speech, but only (oh) is corrected to lower values in more formal styles. (oh) carries the major burden of social significance, and is the focus of non-systematic pressure from above.

[5] Finally, we find that (oh) and (oy) are jointly correlated with the variable (ay), which represents the backing or fronting of the first element of the diphthong in my, why, side, etc. High values of (oh) and (oy) are correlated with back values of (ay), and low values of (oh) and (oy) with low center values of (ay).

26 The quantitative correlations are given in Chapter 12 of The Social Stratification of English in New York City. The relationship of (oh) and (ah) held even within a single ethnic group.
Beyond these immediate correlations, there are more indirect, diffuse relations with such variables as (aw) and /ih/, through which (oh) is connected with all of the other vowels in the vernacular system of New York City speech. This is not the place to pursue the full details of this intricate set of structural correlations within the linguistic system: however, it should be apparent that a full solution to the embedding problem will reveal the ways in which the internal relations of linguistic elements determine the direction of sound change.\(^{27}\) We can summarize the most important relations that center about (oh) in the following notation, which defines the structural units on the left hand side of the equations as linguistic variables:

\[
\begin{align*}
(\text{oh}) &= f_1(\text{St}, \text{C}, \text{E}, \text{A}, \text{Sx}, \text{(ch)}) & \text{St} &= \text{style} \\
(\text{ah}) &= f_2((\text{oh})) & \text{C} &= \text{socio-economic class} \\
(\text{oy}) &= f_3((\text{oh})) & \text{E} &= \text{ethnic group} \\
(\text{ay}) &= f_4((\text{ah})) = f_5((\text{oh})) & \text{A} &= \text{age level} \\
(\text{ay}) &= f_6((\text{oy})) = f_5((\text{oh})) & \text{Sx} &= \text{sex}
\end{align*}
\]

In New York City, the *evaluation problem* was approached more directly than on Martha's Vineyard. The unconscious subjective reactions of the informants to each of the variables were determined. The details of this method have been presented elsewhere;\(^{28}\) in general, we can say that the reliability of the tests can be measured by the high degree of uniformity showed by New Yorkers in contrast to the scattered results from those raised outside of New York City.

The subjective reaction responses to (oh) give us a clear view of the social significance of the variable, as shown in Table 3. The majority of informants responded to the test in a way consistent with the stigmatized status of high (oh).\(^{29}\) Just as the solution to the embedding problem showed no significant stylistic response to (oh) for lower class speakers, here we find that lower class speakers showed no significant (oh)-negative response. The other groups showed (oh)-negative response in proportion to the average height of (oh) used in their own casual speech, and to

\(^{27}\) In a manner which provides empirical confirmation for the view of linguistic structure expressed by A. Martinet, *Économie des changements phonétiques* [Berne, 1955].

\(^{28}\) In addition to Chapter XI of the dissertation cited above, the most detailed presentation of this method is in "Subjective dimensions of a linguistic change in progress," a paper given before the Linguistic Society of America in Chicago, December, 1963.

\(^{29}\) The (oh)-negative response shown here consisted of rating three speakers lower on a scale of job suitability when they pronounced sentences with high, close (oh) vowels, as compared to sentences with no significant variables. Those making the ratings were unaware that they were rating the same speakers.
ON THE MECHANISM OF LINGUISTIC CHANGE

TABLE 3

Percentage of (oh)-Negative Response by Socio-Economic Class and Age Level

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the degree of stylistic stratification in their speech patterns. This result illustrates a principle which holds quite generally in New York City: that those who used the highest percentage of a stigmatized form in casual speech were the most sensitive in stigmatizing it in the speech of others. Thus the lower middle class speakers between the ages of 20 and 39, who use the highest values of (oh) in their own casual speech, show 100% (oh)-negative response. Similarly, we find that the percentages of (oh)-negative response among Jewish and Italian speakers is proportionate to the height of (oh) in casual speech.

This solution to the evaluation problem can hardly be called satisfactory. It is not clear why a group of speakers should adopt more and more extreme forms of a speech sound which they themselves stigmatize as bad speech. Some further explanation must be given.

First of all, it has become clear that very few speakers realize that they use the stigmatized forms themselves. They hear themselves as using the prestige forms which occur sporadically in their careful speech and in their reading of isolated word lists. Secondly, the subjective responses tapped by our test are only the overt values—those which conform to the value systems of the dominant middle class group. There are surely other values, at a deeper level of consciousness, which reinforce the vernacular speech forms of New York City. We have not yet measured these more obscure forms systematically, but through anecdotal evidence we can be sure of their existence—values which cluster about the themes of group identification, masculinity, friendship ties, and so on.

In the case of the alternate preference of Jewish and Italian ethnic

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30 Many subjects reacted to the test with violent and unrealistic ratings; as, for example, marking a person who used high vowels for coffee and chocolate as not even speaking well enough to hold a factory job.
groups for (oh) and (eh), we can put forward a reasonable suggestion based upon the mechanism of hypercorrection. The influence of the Yiddish sub-stratum leads to a loss of the distinction between low back rounded and unrounded vowels in first-generation Jewish speakers of English, so that *cup* and *coffee* have the same vowel. In second-generation speakers of Jewish descent, the reaction against this tendency leads to a hypercorrect exaggeration of the distinction, so that (oh) becomes raised, tense and over-rounded. A parallel argument applies to Italian speakers. This suggestion is all the more plausible since hypercorrection has been demonstrated to be an important mechanism of linguistic change in a variety of circumstances.

THE MECHANISM OF SOUND CHANGE

Solutions to the transition, embedding and evaluation problems have been illustrated by two examples, drawn from Martha's Vineyard and New York City. It is possible to apply the results of our work with these and other variables to a provisional answer to the question: what is the mechanism by which sound change proceeds? The following outline is based upon analysis of twelve sound changes: three on rural Martha's Vineyard, and nine in urban New York City.

1. The sound changes usually originated with a restricted sub-group of the speech community, at a time when the separate identity of this group had been weakened by internal or external pressures. The linguistic form which began to shift was often a marker of regional status with an irregular distribution within the community. At this stage, the form is an undefined linguistic variable.

2. The changes began as generalizations of the linguistic form to all members of the sub-group; we may refer to this stage as *change from below*, that is, below the level of social awareness. The variable shows no pattern of stylistic variation in the speech of those who use it, affecting all items in a given word class. The linguistic variable is an *indicator*, defined as a function of group membership.

3. Succeeding generations of speakers within the same subgroup, re-

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31 I am indebted to Marvin Herzog for this suggestion.

32 Hypercorrection is used here not to indicate the sporadic and irregular treatment of a word class, but the movement of an entire word class beyond the target point set by the prestige model. This mechanism is evident on Martha's Vineyard, as well as New York.

33 The stages suggested here are necessarily ordered in approximately the manner listed, but there are some re-arrangements and permutations in the data observed.
sponding to the same social pressures, carried the linguistic variable further along the process of change, beyond the model set by their parents. We may refer to this stage as hypercorrection from below. The variable is now defined as a function of group membership and age level.

4. To the extent that the values of the original sub-group were adopted by other groups in the speech community, the sound change with its associated value of group membership spread to these adopting groups. The function of group membership is now re-defined in successive stages.

5. The limits of the spread of the sound change were the limits of the speech community, defined as a group with a common set of normative values in regard to language.

6. As the sound change with its associated values reached the limits of its expansion, the linguistic variable became one of the norms which defined the speech community, and all members of the speech community reacted in a uniform manner to its use (without necessarily being aware of it). The variable is now a marker, and begins to show stylistic variation.

7. The movement of the linguistic variable within the linguistic system always led to readjustments in the distribution of other elements within phonological space.

8. The structural readjustments led to further sound changes which were associated with the original change. However, other subgroups which entered the speech community in the interim adopted the older sound change as a part of the community norms, and treated the newer sound change as stage 1. This re-cycling stage appears to be the primary source for the continual origination of new changes. In the following development, the second sound change may be carried by the new group beyond the level of the first change.

[Stages 1-8 dealt with change from below; stages 9-13 concern change from above.]

9. If the group in which the change originated was not the highest status group in the speech community, members of the highest status group eventually stigmatized the changed form through their control of various institutions of the communication network.

10. This stigmatization initiated change from above, a sporadic and irregular correction of the changed forms towards the model of the highest status group—that is, the prestige model. This prestige model is now the pattern which speakers hear themselves using: it governs the audio-monitoring of the speech signal. The linguistic variable now shows regular stylistic stratification as well as social stratification, as the motor-controlled model of casual speech competes with the audio-monitored model of more careful styles.
11. If the prestige model of the highest status group does not correspond to a form used by the other groups in some word class, the other groups will show a second type of hypercorrection: shifting their careful speech to a form further from the changed form than the target set by the prestige group. We may call this stage hypercorrection from above.

12. Under extreme stigmatization, a form may become the overt topic of social comment, and may eventually disappear. It is thus a stereotype, which may become increasingly divorced from the forms which are actually used in speech.

13. If the change originated in the highest status group of the community, it became a prestige model for all members of the speech community. The changed form was then adopted in more careful forms of speech by all other groups in proportion to their contact with users of the prestige model, and to a lesser extent, in casual speech.34

Many of the stages in the mechanism of sound change outlined here are exemplified in the two detailed examples given above. The centralization of (aw) on Martha's Vineyard appears to be a stage 4 change from below. It may indeed have reached stages 5 and 6, but the techniques used on Martha's Vineyard did not provide the evidence to decide this question. There is no doubt, however, that the centralization of (aw) is a secondary change, produced by the re-cycling process when the centralization of (ay) reached stage 8.

To place the raising of (oh) in this outline, it is necessary to consider briefly the evolution of the New York City vowel system as a whole. The first step in the historical record is the raising of (eh). We have reason to believe that the merger of /æh/ with /eh/ began in the last quarter of the 19th century.35 The upward movement of the linguistic variable (eh) continued beyond this merger, leading to the current cumulative merger of /eh/ with /ih/ among most younger New Yorkers. For the entire community, (eh) is subject to the full force of correction from above: the change has reached stage 11, so that the linguistic variable is defined by co-variation with social class, ethnic membership, age level, and contextual style. The raising of (oh) was the first re-cycling process which began when (eh) reached stage 8. The major burden of the raising of (oh) has been carried by the Jewish ethnic group; the extreme upward social mobility of this group has led to a special sensitivity to (oh) in

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34 We find some support in these observations for the idea that people do not borrow much from broadcast media or from other remote sources, but rather from those who are at the most one or two removes from them in age or social distance.

35 See Babbitt, op. cit.
the lower middle class. Thus the merger of /oh/ and /uh/ has gone quite quickly, and (oh) has reached stage 11 for the lower middle class; yet it has hardly touched stage 1 for the lower class.

The third stage in the re-cycling process occurred when (oh) reached stage 8. The structural re-adjustments which took place were complex: (oy) and (ah) were closely associated with (oh), and were defined as linguistic variables only by their co-variation with (oh). Thus the raising of (oy) and the backing of (ah) were determined by internal, structural factors. Change from above is exerted upon (oh), but not upon (oy). In careful speech, a New Yorker might say [its v:\l tin fu:il], *It's all tin foil.* But the shift of (ah) and (oy) have in turn led to a shift of (ay), and this process has apparently begun a third re-cycling. Indeed, the backing of (ay) has reached stage 8 itself, and produced an associated fourth re-cycling, the fronting of (aw). There are indications that (ay) has evolved to stage 9, with the beginning of overt correction from above, although (aw) has reached only stage 4 or 5.36

It is evident that the type of structural re-adjustments that have been considered here require a linguistic theory which preserves the geometry of phonological space. The structural relations found here are strikingly parallel to those established by Moulton in his study of co-variation of mid and low vowels in Swiss German dialects.37 The techniques, the area, the societies studied are quite different, and the coincidence of results provides strong empirical evidence for the view of phonological structure advanced by Martinet.38 Nevertheless, the purely internal equilibria projected by Martinet do not provide a coherent theory of the mechanism of sound change. In the scheme that has been outlined here, they are only part of a more comprehensive process, embedded in the sociolinguistic structure of the community.

CONCLUSION

This discussion has focused on the theme that internal, structural pressures and sociolinguistic pressures act in systematic alternation in the

36 Details are provided in Chapter XII of the dissertation cited above.
38 Both studies show strong evidence for co-variation of low vowels along the front-to-back dimension with back vowels along the dimension of height. Distinctive feature theory, in the form utilized by Halle, *op. cit.*, dissolves the geometry of phonological space into a set of independent dimensions. Even if a phonetic form of distinctive features is provided with scalar values, distinctive feature theory has no rationale for co-variation of grave and acute with compact and diffuse.
mechanism of linguistic change. It can no longer be seriously argued that
the linguist must limit his explanations of change to the mutual influences
of linguistic elements defined by cognitive function. Nor can it be argued
that a changing linguistic system is autonomous in any serious sense. Here
I have attempted to carry the argument beyond the mere cataloguing of
possibilities by introducing a large body of evidence on sound changes
observed in progress. On the basis of this evidence, we can make the
stronger claim that it is not possible to complete an analysis of structural
relations within a linguistic system, and then turn to external relations.
The re-cycling process outlined here suggests the kind of answer we can
make to the basic questions of the inciting causes of linguistic change, and
the adaptive functions of change, as well as the mechanism by which
change proceeds. We can expect that further investigations will modify
the outline given here, but that data from the speech community will
continue to form an essential part in the analysis of linguistic change.
CONTRIVED SPEECH IN WASHINGTON:  
THE H. U. SOCIOLECT

NORMAN BALFOUR LEVIN

Howard University

100.0 INTRODUCTION

By "Contrived Speech" or "In" Talk we mean the deliberate use of a new form or an established form in a new or different sense, tentatively not sanctioned by conventional standard usage.

There are two principal characteristics, which taken in conjunction, further expand our definition. "Contrived speech" may be used for the purpose of identifying one's self with a group; and it may be used for the purpose of concealing the meaning from uninitiated hearers. Thus, as if by definition, we might indeed be investigating the speech of sociologists or linguists.

However, in our paper this afternoon we shall present a grammatico-semantic sketch of the Noun and Adjective Form Class of "contrived speech" as it functions in the ethno-linguistic community of Howard University.

"Historically, Howard’s role has been a vital one in the Negro’s effort to enter the mainstreams of American life. The University has produced more than one-half of the nation’s physicians, dentists and pharmacists; more Negro lawyers than any other institution; more engineers, architects, clergymen and social workers; more Negroes in the many other fields of professional endeavor.”

The 1963-1964 student population was 8,715. The Alumni population for the period 1869-1964 is 23,360. “In every major city of the United

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1 In the elaboration of the basic assumptions of the label “contrived speech”, the author profited from discussions with William A. Stewart, Samuel R. Levin, and Mark Hanna Watkins. The responsibility for the present work is the author’s alone.

2 In the sense that C.I.J.M. Stuart employs this term.


States we can find a good representation of Howard Graduates taking an active role in the affairs of the community (the one exception being certain deep Southern cities)." 5

The distinctive features of the fluctuating forms of "contrived speech" are characterized by their peripheral meaning in contra-distinction to the central meaning 6 in the Bloomfieldian sense; i.e., by their lack of grammatical constraints, by their dependency upon the processes of derivation, compounding, and neologistic fiat for their creation.

The productivity of these displaced forms occurs predominantly in such conceptual domains as food, drink, shelter, money, terms for male and female, physical and mental characteristics, and innovated sociological situations.

Precursory observation of the research which I have been undertaking of the fluctuating forms of "contrived speech" used in various ideolects represented at Howard University, among entering Freshman, 7 would tend to indicate that the index of the dialect flexion of the set is higher than would be suspected. Hence, indicating that there is a lesser degree of mutual intelligibility than one might suppose.

Let us set up the conceptual domains of Food, Crowd, Enjoyment, Drink (alcoholic), and Excellence. The neologistic forms of the ideolects of representatives of California, Ohio, Connecticut, Pennsylvania, and the District of Columbia, in contrast with Howard would be as indicated in Chart I.

The total set of shared features of "contrived speech" of the regional idiolects we shall designate as the sociolect. My label "sociolect" implies

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5 Facts on Alumni, Office of Alumni Affairs, Howard University, March 1965.
7 In cooperation with Charles G. Hurst, Director, Howard University's Communication Sciences Research Center.

---

**Chart I.**

Neologistic Forms of Regional Idiolects

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>crusts</td>
<td>grease</td>
<td>mangin</td>
<td>grit</td>
<td>grub</td>
<td>grit</td>
</tr>
<tr>
<td>Crowd</td>
<td>group</td>
<td>bunch of</td>
<td>the people</td>
<td>the set</td>
<td>the heads</td>
<td>the people</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>kicks</td>
<td>a blast</td>
<td>a ball</td>
<td>a jam</td>
<td>to party</td>
<td>a jam</td>
</tr>
<tr>
<td>Excellence</td>
<td>to ace</td>
<td>to smoke</td>
<td>to blow</td>
<td>to grand on</td>
<td>to smoke on</td>
<td>to grand on</td>
</tr>
<tr>
<td>Drink</td>
<td>juice</td>
<td>booze</td>
<td>shot</td>
<td>taste</td>
<td>head action</td>
<td>taste</td>
</tr>
</tbody>
</table>

---
that a stratificational approach with an investigation of the structural semology is necessary. It is to be broader in concept than that of W. Nelson Francis' "Social or class dialects", Basil Bernstein's "public language," and Z. Vančuras' "Hospodářsky jazyk."

Results of my recent study indicate that the production and receptive control of the sociolects mutually understood by both the student population at Georgetown and Howard Universities is 20.4%.

Mutual unintelligibility existing between the two sociolects can be best illustrated as follows: Let Column I represent the fluctuating forms in the sociolect at Howard University, then let Column II represent the definition of the forms given by Georgetown University and Column III the definition of the forms as they are in current use at Howard University.

**CHART II.**

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>together</td>
<td>joined</td>
<td>to be well formed</td>
</tr>
<tr>
<td>2</td>
<td>taste (N)</td>
<td>preference</td>
<td>drink (alcohol)</td>
</tr>
<tr>
<td>3</td>
<td>to grand on</td>
<td>to boast, to show off</td>
<td>to excel, to put on a front</td>
</tr>
<tr>
<td>4</td>
<td>phat</td>
<td>obese</td>
<td>very pretty, shapely,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>wonderful</td>
</tr>
<tr>
<td>5</td>
<td>grit (N)</td>
<td>guts</td>
<td>food</td>
</tr>
<tr>
<td>6</td>
<td>whipped</td>
<td>exhausted, beat</td>
<td>very ugly, beat</td>
</tr>
<tr>
<td>7</td>
<td>dip (N)</td>
<td>a swim</td>
<td>a change</td>
</tr>
<tr>
<td>8</td>
<td>hurt (N)</td>
<td>injury</td>
<td>trouble</td>
</tr>
<tr>
<td>9</td>
<td>heavy</td>
<td>weighty</td>
<td>intelligent</td>
</tr>
<tr>
<td>10</td>
<td>light</td>
<td>easy, not intelligent</td>
<td>stupid</td>
</tr>
<tr>
<td>11</td>
<td>nose-job</td>
<td>plastic surgery</td>
<td>to be completely in love</td>
</tr>
<tr>
<td>12</td>
<td>boss</td>
<td>employer</td>
<td>very pretty, wonderful</td>
</tr>
<tr>
<td>13</td>
<td>pin (V)</td>
<td>to become engaged,</td>
<td>to observe, to become</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to stick</td>
<td>engaged</td>
</tr>
<tr>
<td>14</td>
<td>to school</td>
<td>to teach</td>
<td>to inform</td>
</tr>
<tr>
<td>15</td>
<td>short (N)</td>
<td>stumpy</td>
<td>car</td>
</tr>
<tr>
<td>16</td>
<td>wrong</td>
<td>incorrect</td>
<td>crude, scheming</td>
</tr>
<tr>
<td>17</td>
<td>hammer</td>
<td>tool</td>
<td>pretty girl</td>
</tr>
<tr>
<td>18</td>
<td>to flake out</td>
<td>to leave</td>
<td>to go to sleep</td>
</tr>
<tr>
<td>19</td>
<td>to grease</td>
<td>to flatter</td>
<td>to eat</td>
</tr>
<tr>
<td>20</td>
<td>to natch</td>
<td>to agree</td>
<td>to talk</td>
</tr>
</tbody>
</table>
200.0 Morphophonics

The character of morphophonetic alternation of the contrived forms may be classified in terms of phoneme shift: syllabic and non-syllabic, phoneme loss and syllable loss.

Phoneme shift: Syllabic.

/ʌ/ > /ɪu/ /ʌgli/“unattractive” > /úgli/“very unattractive”
T 944.1

/ʌ/ > /u/ /ʌgli/“unattractive” > /úgli/“very unattractive”
Elicited

/ʌ/ > /ɪ/ /skánki/“homely” > /skínki/“unduly homely”
T 904.1

/ɪ/ > /ʌ/ /hwɪpt/“hideous” > /hwʌpt/“very hideous”
Elicited

Phoneme shift: Non-Syllabic

/d/ > /t/ in final position
/rúwɪnd/“ugly” > /rúwɪnt/“unduly ugly”
Elicited

Phoneme loss.

/ə/ > /∅/ in initial position
/aflikted/“inadequate” > /flɪkted/“very inadequate”
Elicited

/t/ > /∅/ in final position
/teyst/“alcoholic beverage” > /teys/“alcoholic beverage”
T 926.0

Syllable loss.

/ælə/ > /∅/ /æləbəmə/“Alabama” > /bəmə/“rustic”
T 904.0

/mə/ > /∅/ /məʃɪjn/“machine” > /šɪjn/“automobile”
T 916.0

/ðə/ > /∅/ /bráðə/“brother” > /bra/“Negro”
T 912.0

300.0 Inflection of the Nominal Theme

In “contrived speech” there are two Nominal Themes, the absolute and the additive.
The *absolute* is capable of standing as noun forms without any affix and has simple stems.

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>T Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>fox</td>
<td>&quot;pretty girl&quot;</td>
<td>932.0</td>
</tr>
<tr>
<td>dobb</td>
<td>&quot;hat&quot;</td>
<td>928.0</td>
</tr>
<tr>
<td>chine</td>
<td>&quot;auto&quot;</td>
<td>916.0</td>
</tr>
<tr>
<td>heart</td>
<td>&quot;that which is deeply entrenched, girl friend&quot;</td>
<td>936.0</td>
</tr>
<tr>
<td>slack</td>
<td>&quot;tension, pressure&quot;</td>
<td>954.0</td>
</tr>
<tr>
<td>bag</td>
<td>&quot;one's personal world, setting, at home, at ease&quot;</td>
<td>904.0</td>
</tr>
</tbody>
</table>

The *additive* nominal theme is characteristically dependent and affixal.

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>T Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>the man</td>
<td>&quot;authority&quot; (police)</td>
<td>968.0</td>
</tr>
<tr>
<td>coollness</td>
<td>&quot;poise&quot;</td>
<td>920.0</td>
</tr>
<tr>
<td>enjoys</td>
<td>&quot;enjoyment&quot;</td>
<td>930.0</td>
</tr>
<tr>
<td>the happenings</td>
<td>&quot;situation&quot;</td>
<td>934.1</td>
</tr>
<tr>
<td>chukker</td>
<td>&quot;Caucasian&quot;</td>
<td>930.0</td>
</tr>
</tbody>
</table>

### 400.0 NOMINAL DERIVATION

The main grammatical processes for noun derivation of "contrived" forms are compounding and affixation.

The nominal affix /ɔ/, prefixed to nominal themes, forms nouns denoting personified abstraction.

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>T Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>the hurt</td>
<td>&quot;a precarious situation&quot;</td>
<td>966.0</td>
</tr>
<tr>
<td>the man</td>
<td>&quot;authority&quot; (police)</td>
<td>968.0</td>
</tr>
<tr>
<td>the people</td>
<td>&quot;ethnic group, downtown&quot;</td>
<td>970.0</td>
</tr>
<tr>
<td>the hawk</td>
<td>&quot;the wind, the cold weather&quot;</td>
<td>964.0</td>
</tr>
</tbody>
</table>

Residual form: the main "my fiancée" Elicited

The nominal affix /-nes/, suffixed to nominal adjectival themes, forms nouns of abstraction denoting quality or degree.

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>T Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>coolness</td>
<td>&quot;poise&quot; &lt; cool &quot;poised&quot;</td>
<td>920.0</td>
</tr>
<tr>
<td>phatness</td>
<td>&quot;beauty&quot; &lt; phat &quot;magnificent, beautiful&quot;</td>
<td>948.0</td>
</tr>
<tr>
<td>flyness</td>
<td>&quot;popularity&quot; &lt; fly &quot;popular&quot;</td>
<td>Elicited</td>
</tr>
</tbody>
</table>

The nominal affix /-ər/, suffixed to nominal themes, forms nouns of abstraction.

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
<th>T Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>hummer</td>
<td>&quot;a false tip&quot; &lt; hum &quot;onomatopoetic form&quot;</td>
<td>942.0</td>
</tr>
</tbody>
</table>
The agentive nominal affix /ər/, suffixed to verbal themes, denotes the one who acts.

rapper "a loquacious person" < to rap T 950.0
swinger "one who parties" < to swing T 960.0
liver "one who attempts to deceive" < to live T 944.0

The agentive nominal affix /stər/, suffixed to nouns and adjectives, forms nouns denoting who.

slickster "a rascal" < slick Elicited
hipster "a person who is astute, aware (socially)" < hip T 938.0
funster "one who teases" < to fun Elicited

The agentive nominal affix /ər/, suffixed to nominal themes, denotes the one who belongs to.

chukker "Caucasian" < chuk "Mr. Charlie" T 918.0
snikker "a member of SNCC" < SNCC "Student Non-Violent Coordinating Committee" Elicited

The genitive nominal affix /ij/, suffixed to nominal themes, denotes belonging to.

roomy "room-mate" T 952.0
homey "hometown friend" T 940.0

The abstract nominal affix /z/, suffixed to verbal themes, forms nouns of abstraction.

happenings "news, situation" < to happen T 934.0
enjoys "enjoyment" < to enjoy T 930.0

500.0 Inflection of the Adjective Form Class

The adjective form class falls into two sub-classes, the descriptive and designative.

The descriptive are of two classes, the pejorative and the ameliorative. The absolute pejorative may function as nouns.

fly "popular" > a fly "a popular person" T 952.1
lame "inadequate" > a lame "an inadequate person" T 938.1
The additive pejorative may not function as a noun and is endocentric in construction.

whapped chick “an ugly girl” Elicited
triffing dude “a scheming fellow” Elicited
shaky bama “an undependable rustic” Elicited

The absolute ameliorative expresses the superlative form and is endocentric in construction.

main rib “best girl” Elicited
my boy “best friend” Elicited
fly short “a most wonderful car” Elicited

The amelioratives are fewer in number, but vary in their degree of intensity.

mellow “soul stirring” (implying accompaniment) Elicited
fine “one degree less than mellow” T 936.0
nice “one degree less than fine, very pretty” T 958.1

The derivative affixes /ær/, /ɪst/, suffixed to absolute pejorative and ameliorate designative adjectives express the comparative and the superlative. These suffixes are reduplicative in meaning and heighten their degree.

phat rib “very pretty girl” Elicited
phatter rib “a much prettier girl” Elicited
phatest rib “beauty personified” Elicited

The derivative affix /æd/ suffixed to pejorative demonstrative adjectives denotes degree of intensity

/hwipt/ whipped “ugly” Elicited
/hwupt/ whuppt “very ugly” Elicited
/hwAptid/ whuptid “extremely ugly” T 952.1

The pejorative adjectival affix /ɪj/, suffixed to nominal themes, expresses deprecation.

skinky “homely” T 904.1
mouthy “talkative” T 944.1
slabby “coined word: slob+flabby, careless” T 940.1

The adjectival affix /ful/, suffixed to adjectival themes, denotes filled with.

soulful “filled with Negritude” <soul “Negritude” T 958.0
The ameliorative adjectival affix /ij/, suffixed to adjectival themes, denotes diminutive.

dufy “silly” <dufus “stupid” T 940.1
T 924.1

The intense adjectival affix /iʃ/, suffixed to adjectival themes, expresses the intensive.

lamish “very stupid” <lame “stupid” T 938.1

As noted, there are a limited number of affixes suffixed to the adjective form class. The preferred form is the reinforced descriptive subordinate theme.

“He is so lame he needs crutches” has more privilege of occurrence than “He is the lamest dude around.”

The designative adjective indicates the distinctive features of presence, in contrast to absence.

this cat “the person (male) who is present” Elicited
that chick “the person (female) who is not present” Elicited

600.0 Nominal Compounds

The grammatical process of compounding of Nominal Themes occurs as endocentric and exocentric constructs.

Endocentric constructs occur with the following form classes:

AN shaky cat “unreliable fellow” T 920.1
trifling dude “scheming fellow” Elicited
phat babe “very pretty girl” T 944.1

NN chicks kicks “girls shoes” Elicited
watts line “an emergency telephone call” Elicited

Exocentric constructs occur with the following form classes:

NN bun biter “flatterer” T 922.0
soul kitchen “restaurant which serves home cooking” Elicited
block talk “language peculiar to Washington” Elicited
grit gig “banquet” Elicited

700.0 Neologistic Fiat

The displaced forms created by neologistic fiat are:

1. learned forms

to psyche “to cajole” Elicited
program “conversation” Elicited
dissertation “a long winded explanation” T 922.0
2. foreign forms
   mangin  "to eat"  Elicited
   спиeler  "a fast talker"  Elicited
   kosher  "correct"  Elicited
   blasé  "exaggeration, procrastination"  T 906.0

3. semi-erudite forms
   conversate  "to talk"  Elicited
   break through  "to go"  Elicited
   impotent  "powerful"  Elicited

4. paronomastic form
   no bout a doubt it  "no doubt about it"  Elicited

5. euphemistic forms
   cakes  "posterior"  T 914.0
   to turn him on  "to give information"  Elicited

6. abbreviated forms
   t.h.  "brothel"  Elicited
   p.w.t.  "Caucasian"  Elicited

7. nonce forms
   bula doo  "poor taste"  T 924.1
   blip  "mild expletive"  T 908.0

8. symbolic form
   durwa  "records of slow music"  T 926.0

9. onomatopoetic form
   git go  "from the beginning"  Elicited

10. reduplicated forms
    nitty gritty  "the basic facts"  Elicited
    goo gobs  "much, many"  Elicited

11. coined forms
    snikker  "one who belongs to Student Non-Violent Coordinating Committee"  Elicited

800.0 Summary

In the preceding account, the salient features of the Noun and Adjective Form Classes of the Howard University Sociolect have been described. A residue of partially solved problems resulting from the material thus far analyzed will require future investigation. To illustrate:

1. The distribution of negative reaction phrasals such as "Ain't that just like nothin'";
2. The speech signal preceding dual reaction compounds such as "Tighten Time."

If, as we have indicated previously, among entering freshmen there is a lesser degree of mutual intelligibility of "In" talk at Howard University than anticipated, and if the intelligibility of "In" talk increases, as has been observed, during their stay on campus, and in addition, if the speakers of the Sociolect return to the community as prestigious and influential members, could we not predict an increasing degree of spread of the Sociolect acquired at Howard University?

I believe that justification for "In" talk, on the informal level, i.e. group identification, together with an ever increasing enrollment and consequent alumni body, will allow such a prediction.\(^8\)

900.0 **text.**

902.0 **bag**

"one's personal world, one's own setting, at home, at ease"

902.1 He's deep into his bag.

He feels at home.

904.0 **bama**

"rustic, southerner"

904.1 That skinky broad is a mississippi bama.

That ugly girl is a rustic from Mississippi.

906.0 **blase**

"exaggeration, procrastination"

906.1 He turned on the blase.

He exaggerated.

908.0 **blip**

"a mild expletive"

908.0 Ain't that a blip!

Isn't that something!

910.0 **block talk**

"D.C. style dress, speech, behavior"

910.1 Only block girls wear nineteens.

Only girls from D.C. wear the sling shot type shoe.

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\(^8\) Raleigh Morgan, Jr., in a private discussion, indicated that he did not concur with my conclusion. His justification is based on the premise that sociolect is a class concept, therefore the more educated the lower socio-economic speakers become, the less will be the spread. Indeed he predicts an amalgamation of the Sociolects (See Chart II). My label sociolect, as previously defined, is not class based. Not only do the factors of identification, wit, exaggeration, prestige and concealment militate against amalgamation, but it is well known by users of "in" talk that as soon as a fluctuating form is introduced in the non-"in" talk sociolect, a new form is contrived by the H.U. sociolect speakers.
That was a crummy gig big bro gave to me—I don’t want to bogart no jams; ain’t that just like nothing. It was unfair of my fraternity brother to make me crash a party; it just doesn’t make sense.

I bust my cakes. I expelled wind.

That boss chine is saying something. That is a very splendid car.

Those bama chukkers best not bogart our soul bro too much. Those rustic southern whites better not beat on the Negroes much longer.

After the shaky cat sucked her in she was coolness personified. After the unreliable fellow deceived her she maintained her poise.

I asked that bun biter for the time, he gives me a dissertation. I asked that flatterer a simple question and I received a long winded explanation.

His suit was a bula doo and he was dufus. His clothing was in poor taste and he was stupid.

They only listen to records of slow music at parties.

There’s a bad dobb. That’s a good hat.

He really tightened up on his enjoys. He began to do those things which give him enjoyment.
The girl is a fox.
She is an attractive young lady.

When my main girl returned from the city the happenings were wonderful.
When my girl friend came back from New York the situation was wonderful.

That fine chick is my heart; without her life is not worth living.
That very pretty girl means a great deal to me.

That lame makes like a hipster, but he is totally out of it.
That not too bright person acts informed, but he doesn’t know what’s going on.

My dufy homey is a slabby dresser; she’s out there and don’t bit more care.
My stupid hometown girl friend is a careless and indifferent person.

The party was a hummer.
The party was dull.

That phat babe is for real, but her mouthy main is a yugly jiver.
That very pretty girl is sincere, but her talkative boyfriend is a very ugly deceitful person.

Dig up man, your kicks went out of style the year they organized baseball.
See here, your shoes are out of style.

The chick is so choice only one word describes her completely, phatness.
The girl is so shapely that only one word describes her, a beauty.
950.0 rapper “a good conversationalist”
950.1 That rapper is a fine dude.
That very nice chap talks well.

952.0 roomy “room-mate”
952.1 My roomy is deep, fly and cool, but her face is whipped.
My room-mate is intelligent, popular and poised, but she is extremely ugly.

954.0 slack “tension, pressure”
954.1 Cut me some slack.
Lessen the tension.

956.0 slicker “a schemer, a fast talking person”
956.1 He’s a real slicker; he schemed my main out of five cents.
He’s a conniving person; he cheated my best friend out of five dollars.

958.0 soul “fine inner qualities attributed to Negritude”
958.1 That nice chick has a lot of soul.
That pretty girl has many fine inner qualities attributed to negritude.

960.0 swinger “a worldly person”
960.1 He’s a real swinger; he’s right into it.
He’s worldly.

962.0 taste “very nice, alcoholic beverage”
962.1 It’s saying a taste.
It’s very nice.
962.2 How about a little taste man?
Would you like to have a drink?

964.0 the hawk “wind, bad weather”
964.1 The hawk is really talking.
It’s very windy.

966.0 the hurt “a precarious position”
966.1 He put the hurt on her.
He maneuvered her into a precarious position.

968.0 the man “authority, the police”
968.1 I duffed from the man and he tried to blow me away on the highway.
I lost the cop after he tried to catch me on the highway.
970.0 the people “one’s best friends, family, parents, relatives, ethnic group, downtown”

970.1 Man, me and the people jammed at the caves to some funky sounds.
My best friends and I went to the Bohemian caves and had a good time listening to bluezy music.

972.2 Me and the people made the main set and everything was up tight and out of sight.
My boy friend and I went to a small party which was extremely nice.
MR. STEVICK: I've wanted for some time to get the answer to something which came up once when I was a graduate student at Columbia University. We had a returned Fulbrighter, Stewart Waldo, who had been studying the dialects of Gloucestershire, and he had with him a young man, a native of Gloucester, who had been his informant. The informant, in the course of conversation, made a statement something like this: Well, at the present time I say so-and-so, but when I get to be 65 I shall say such-and-such. We all tended to pooh-pooh this and to smile at one another, but some of the things that have been said here this afternoon make me wonder now. I'd like to ask our participants if any of them can shed light on this. Were we right in smiling when he predicted what he would say when he was a member of another age-group?

MR. LABOV: I think he showed an unusual degree of prescience, based on his own synchronic analysis. This is the phenomenon known as "age-
grading," which Hockett has discussed and which has been investigated only peripherally. People may be aware that one type of speech is appropriate for a youngster, another type for a person in his 30's, and another type for an older person. We have noticed that people develop strong constraints or highly marked dialect characteristics in their speech in the prime of life, perhaps responding to their occupational roles or to other social pressures, and in their older years—after retirement especially—they may shed some of these marks. Because of the existence of age-grading, we say that it is essential to have, in every investigation of linguistic change, at least two points in real time as a base. That's why I've gone to areas where the Linguistic Atlas of the Eastern United States has laid a foundation—so that the process of shift in age could be abstracted from the actual process of linguistic change. In New York City we fortunately have an excellent report from Professor Babbitt in 1896. He made a short but excellent report on the city's phonemic system at that time. We are, consequently, able to isolate the factor of age-grading. All we have done so far, however, in investigating the thing you're talking about is to recognize its existence. I think that in some cultures which are more stable than the one we're investigating, age-grading might predominate over the sort of linguistic change I have been talking about.

**MR. FISHMAN:** It doesn't shock me at all that people can plan to consciously modify their speech behavior. They do that with their sexual behavior, their purchasing behavior, their political behavior. Indeed, the best predictor of how a person is going to vote is to ask him; this is not an absolutely good predictor, but it's still the best. This reminds me of the lady who was given some very bad news while she was eating. She said, "Wait till I finish this soup, because when I finish this soup, am I going to give a scream!"

**MR. STEVICK:** In the same vein, I wonder if Professor Levin or any of his informants would predict, positively or negatively, whether some of these neologisms he reports will stay with his informants long after college days.

**MR. LEVIN:** I believe they will, at least in a passive stage if not in an active form.

**MR. GUMPERZ:** A thing that has puzzled me for some time is that language conflict does not occur in many situations where we might expect it. In India, language conflict almost always accompanies any other kind of social conflict. By contrast, here in the United States we have great political strife in the South, but I have never heard this strife verbalized in terms of a language conflict. In fact, I have heard such statements as: "We may not make our nouns and verbs agree, but we're good people." In India a more likely statement would be: "There is no need for us to make nouns agree with verbs; we should pass
a law that nouns and verbs are not to agree.” Is there any way of predicting when social conflict is likely to result in language conflict and when it is not?

**MR. FISHMAN:** It seems to me that the Negro struggle in the United States is not yet one between two very different and separate groups, in terms of historical values. It is not like the struggle between the Flemish and the Walloons in Belgium, or the differences that exist in India. It is rather a struggle of one group of Americans to obtain the rights that are presumably the rights of all Americans. There is no overriding element of mutual de-identification in this struggle, as in Belgium or India.

However, if I understand Dr. Levin's material and his views correctly, should the nature of the struggle change so that Negroes are no longer mobilized in terms of general American values but in terms of some separate Negro values, then a separate Negro form of English might become established and cultivated in the direction of maximizing the differences between Negro English and white English. Differences between related dialects can be cultivated, exploited, increased. Should such a split in values arise, language loyalty could very well become an ingredient in the struggle.

**MR. LABOV:** Dr. Fishman has expounded the basic forces at work. My own data in New York City have provided some very solid facts that point to a more complex situation. The attitudes of white people in the city are extremely uniform toward the New York City vernacular: they are solidly in agreement that New York speech is “bad speech,” and the prestige dialect, so far as New Yorkers are concerned, has always been a borrowed model. What I have called “linguistic self-hatred” is quite characteristic of white New Yorkers. There is, however, a precisely complementary set of attitudes in the Negro population. For them “Northern speech” (that is, New York speech) is ipso facto “good speech,” and Southern speech is “bad,” while white New Yorkers tend, about fifty-fifty, to think of Southern speech as rather “cute” and “attractive.”

This split among the adults is paralleled by a development of the sort that Dr. Fishman foresaw. Younger Negroes insert Southern Negro characteristics in their speech, to the consternation of their parents and older Negroes. However, I should note that most leaders of the Black Nationalist movement are very close to standard American English, in their grammar and in their style, and do not use Southern characteristics or indeed many characteristics which are markers of Negro speech.

**MR. GUMPERZ:** I have another question for Professor Labov. You say that your studies show a connection between the movement of /ay/ and /oy/. Is there any reason why you could predict that /ey/ will not be affected?
MR. LABOV: In terms of the concept of phonological space I have developed here, nothing could be more clear than that /ey/ would not rise. First, there is a system of long vowels and/or centering diphthongs, which originally were related like this:

\[
\begin{array}{ll}
\text{ih} & \text{uh} \\
\text{eh} & \text{oh} \\
\text{ah} & \\
\end{array}
\]

In the community investigated, the high-front and mid-front have merged, and the high-back and mid-back have merged, forming a triangular system:

\[
\begin{array}{ll}
\text{[iːɔ] eh} & \text{oh [uːɔ]} \\
\text{ah} & \\
\end{array}
\]

Then, there is a system of forward-upgliding diphthongs, originally like this:

\[
\begin{array}{ll}
\text{iy} & \\
\text{ey} & \text{oy} \\
\text{ay} & \\
\end{array}
\]

There is a hole in the high-back position since there is no /uy/ (very few New Yorkers say buoy or [chop] suey as one syllable). As /oy/ moves upward to fill the hole, /ay/ moves to the back. The result is that a skewed system becomes perfectly symmetrical:

\[
\begin{array}{ll}
\text{iy} & \text{oy [u]} \\
\text{ey} & \text{ay [a]} \\
\end{array}
\]

The pronunciation [mo bui] 'my boy' is the most extreme form, but it shows the direction in which the change is headed. This is repeated in the system of backward-upgliding diphthongs, in which we have:

\[
\begin{array}{ll}
\text{iw} & \text{uw} \\
\text{ow} & \\
\text{aw} & \\
\end{array}
\]

Our theory of phonological space would predict that /aw/ would move forward to [æ] paralleling the movement of /ay/ to [æ]. And this, in fact, is what happens—there is detailed quantitative evidence to show that to the extent that /ay/ moves to the back, /aw/ moves to the front, yielding:

\[
\begin{array}{ll}
\text{iw} & \text{uw} \\
\text{aw} & \text{ow} \\
\end{array}
\]

There is no reason for /ey/ to rise, because it is now structurally parallel to /ay/, not /oy/. I think we have here a remarkable demonstration of the internal structural pressures that Martinet has discussed in his *Économie*.

---

MR. DI PIETRO: It is apparent that greater understanding of cultural matrices is important for the language learner—especially for the learner of languages spoken in widely divergent cultures. I would like to ask Professor Gumperz if there has been any detailed study of how the native expects the "well-mannered" non-native to behave culturally and linguistically in his country. Clearly, where physical differences are outstanding, the non-native can not hope to pass as a native. Perhaps at least socially he should not try to.

MR. GUMPERZ: I believe that a situational analysis, such as the anthropologist can provide on the basis of participant observation, can indeed assign an appropriate role to the Westerner. Westerners have been in India, for example, for hundreds of years. There is an appropriate role for the Westerner there—at least in certain circles: it is to use the native language with monolinguals and to use English with bilinguals. However, if the Westerner and the bilingual become friends—if the relationship becomes person-oriented rather than status-oriented—Hindi becomes appropriate. This is a social privilege he is granted, a sign that he is regarded as an equal. His formal role in Indian society, however, is to speak English and have it spoken to him, and thus some Indians refuse to address him in Hindi.

MR. FISHMAN: There may be an appropriate role for the sympathetic foreigner who is recognized as a foreigner by his speech. This reminds me of the story about the young American woman who married a Frenchman and who worked very intensively on her French so that she would be taken for a native when she went to Paris with her husband. She practiced her pronunciation so hard that there wasn't a flaw in her accent. But, because she learned so little vocabulary, instead of being regarded as a sympathetic foreigner, she was taken for a dumb native.

MR. GUMPERZ: I think I can parallel this with the experience we had in the small village in India where we lived as anthropologists for two years. We would be introduced to other Indian farmers by our names, but the introduction would be accompanied by a long explanation, drawn from mythology, as to how Americans are related to Rajputs—the majority caste in the locality—because Arjuna, the mythical ancestor of Rajputs, had married an American. This was to suggest that we be treated as equals.

MR. STUART: I've been very interested by the emphasis that has been laid on the socio-cultural matrix in which language events occur. It reminds me of J. R. Firth's insistence upon the importance of context of situation. But I should like to say that, in line with the work I've been doing at the National Institutes of Health in what I've always called biosemiotics, but which Dr. Sebeok calls zoosemiotics, it seems very clear that human language seems to operate not so much in what we grandly call communication, but rather
in orientation. The organism, as one individual in a behavioral population, seems to be necessarily oriented to a very complex environment. This orientation seems to be handled by the higher cortical functions and is especially available for observation in language. Language can thus be thought of, from one point of view, as a complex orientational mechanism for the higher functions. I think this very well supports the point of view brought forth by the speakers in this afternoon's panel, but it does raise a problem, which I put as a sort of general question to the panel.

We have to be very careful about what we mean by the word *language*. If we use the word to designate a system which is available for investigation, that is, has a definite topology, then we have to acknowledge that no one has yet found this topology. This reduces linguistic statements to metaphysical statements. But if we use *language* as a designation for *system* and then say that this system is simply a metaphor that we construct to account for features of arrangement in something that does have a definite topology, like speech events, then we save the empirical status of linguistic statements. But this leaves us in great trouble in handling the linguistic concept of the code, the inescapable system that speakers use to communicate with one another.

In the same sort of way, I wonder whether any of the members of this panel have considered whether there is a definite system of categories of ethnic, social or other entities, which the linguistic performer, the speaker, has to orient himself to in his language activity. Or is this set of categories also open to multiplicity of explanation?

*MR. GUMPERZ:* I do indeed see some similarities between the things which have been said here and the context of situation, as it is being used by the neo-Firthians. There is one significant difference: we distinguish between the cognitive aspect of language and the social aspect of language—the extent to which words relate to concepts or objects in the outer environment, on the one hand, and, on the other hand, the extent to which words relate individuals to other individuals. For sociolinguistics the latter relationship is important—we have to restrict the word *context* to this sense; we deal with social relations. There is a metalanguage being developed for the abstract study of social relations, primarily by a group of social anthropologists, of whom J. R. Firth's namesake, Raymond Firth,² is a prominent example: the language of status, social relationships, quality of social relationships, etc. There are also concepts being developed by American sociologists—the concept of *encounter*, as it is being developed by Irving Goffman and others, for example. All these are relevant here. I think these can be considered as abstract concepts, as being realized in particular physical environments, in the same way that phonemes are realized in sounds. All this is just developing. The formalization will have to wait a few years.

MR. FISHMAN: This is the problem of what should be the rhetoric of the sociology of language, i.e. what should be the concepts or parameters in terms of which we should describe the social context. That is always the first problem, the first systematic problem at least, in a new discipline. We have been trying to describe people for a long time, but in personality analysis there is still the question of how to describe a person. He can be described in so many different ways. What are the minimal parameters that exhaustively help us describe what is crucial about a person that distinguishes him from another person? The question just raised is the crucial question: what are the parameters or units of social interaction that enable us to describe social interaction and to distinguish one kind of social interaction from another? The rhetoric is just developing, as Dr. Gumperz has said, and there are several terms in non-overlapping use. Just as with some linguistic terms, some sociological terms are used rather idiosyncratically by different people to mean somewhat different things from what someone else means by the same term. The term role, for example, is used in at least four different systematic ways. There are several beginning rhetorics of this kind, and they pose rather serious research problems. You ought to invite us back ten years from now for a progress report.

MR. STEVICK: He has now got it down from a hundred years to ten.

MR. LUELSDORFF: Ever since the publication of Chomsky's Syntactic Structures there has been a tendency among linguists to frame questions concerning the grammaticality of an utterance in terms of the acceptability of the utterance to the native speaker. An utterance is said to be grammatical if and only if it is acceptable to the native speaker. Grammaticality is thus seen to depend on the secondary responses of the native speaker. The observation that some utterances are more acceptable to native speakers than others has led to the conclusion that various degrees of grammaticality are to be distinguished. An obvious shortcoming of this approach is that the grammaticality of an utterance depends on the value judgments of the native speaker, with the result that what is grammatical for one speaker is not grammatical for another, and what seems more grammatical to one speaker seems less grammatical to another.

An alternative approach, suggested by some of the comments in Professor Gumperz' paper, is that grammaticality be thought of not in terms of the appropriateness of an utterance to the situation. Such appropriateness would be determined by direct observation of what people say and the context in which they say it. An utterance would be said to be grammatical if it is appropriate to the context in which it occurs. Various code levels would emerge, associated with various linguistic and practical contexts, and each code level would be characterizable in terms of various code markers. As you
see it, is the function of the grammarians not only to describe how people speak but what people say and when they say it?

MR. GUMPERZ: I would prefer to separate my grammars from my linguistic repertoires. I would prefer to bypass the question of grammaticality. Somehow we must continue to have a level in which we leave out considerations of social context. Just as we can not analyze our semantics without having done our syntax, I don't think we ought to analyze our pragmatics without having done our grammar in general. In that sense I would like to suspend the question of what is grammatical and what is not. The concept of grammaticality is, however, culturally determined, as has been pointed out very forcefully by Dell Hymes in a recent article.\(^3\) There is, Hymes says, an ethnic dimension to grammaticality, but I think this ethnic dimension turns out to be much less important in societies such as ours, where standard languages are well established. It is possible to get agreement on what constitutes grammaticality in the vast majority of languages we will be studying. Let’s use these languages to set up our linguistic descriptions. But let us go beyond grammaticality to investigate problems of short-term linguistic change, and in order to teach social communication rather than just grammaticalness.

\(^3\) Dell Hymes, “Towards ethnographies of communication,” *American Anthropologist* 66: no. 6, part 2, pp. 1-34.
PANEL III

TEACHING LANGUAGE SKILLS
LINGUISTICS AND THE TEACHING OF READING *

CARL A. LEF EVRE

Chicago Teachers College North

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METHOD ANALYSIS
A Survey of its Development, Principles and Techniques

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0. INTRODUCTION

The purpose of this survey is simply to give a general idea of what has been done in the field of method analysis—the elaboration of principles, development of techniques, adaptation to mechanolinguistic analysis, and the making of method profiles.

What is the place of method analysis in the field of language didactics? Of what practical use is it? When and where was it developed? What are its basic principles?

0.1 Method Analysis in Language Didactics

One of the most important and at once most neglected branches of language didactics is the analysis of language teaching. One of the reasons why language didactics has for centuries remained a matter of opinion rather than of fact is that it has not yet developed its own principles and techniques of analysis. For without analysis, no scientific study of language teaching is possible.

The analysis of language teaching rests on two fundamental distinctions—(i) between language teaching and language learning, on the one hand and (ii) between these and the methods used in language teaching and learning, on the other. For the language learning process is obviously quite distinct from the language teaching process; in each case, what has to be analyzed is not at all the same thing. Language learning is in no way dependent on language teaching, and language teaching does not necessarily result in language learning.

Secondly, both the teaching and learning of a language are quite distinct from the methods used. Two teachers, using the same method, may produce quite different results. There are therefore three separate fields
of analysis—learning, teaching and method. It is only after having analyzed these processes separately that any cause-effect relationship may be established between their constituent elements.

Of these three fields of analysis, it is the latter, method analysis, with which we are here concerned.

0.2 The Uses of Method Analysis

Method analysis has not only an obvious theoretical relevance to the study of language didactics, it has also a great deal of practical usefulness in the choice and application of language teaching materials.

Ever since the invention of printing, the materials put into the hands of language learners have been assuming more and more importance. In recent years, with the increase in the extent and ease with which recordings and pictures are disseminated, the language learning material is rapidly becoming the chief vehicle of language instruction.

Every year, departments of education, curriculum directors, and the teachers themselves are faced with the problem of choosing the language materials best suited to their needs. They are continually being asked to abandon old methods and to adopt new materials, without always being sure of what is old and what is new, and of what the changes would involve. In some parts of the world, the possible choices of elementary language texts approaches the hundred mark—ranging from locally produced regional efforts, which are not necessarily bad, to the lavishly published national courses, which are not necessarily better.

The choice of the language materials is sometimes made by a committee of experienced teachers who have tried out a number of methods in class. Since there are no standard criteria, the various results are not comparable; since not all possibilities are studied, the choice is limited; and since so much weight is given to teacher opinion, the conclusions are subjective. Even if such efforts were valid as experiments, interpretation of the results would have to be based on an analysis of the methods themselves. It is for these reasons that techniques of method analysis had to be developed.

0.3 The Development of Method Analysis

This development of method analysis goes back to the 1940's, when a series of proposals were made in London for a descriptive rather than prescriptive approach to language teaching. These later came out as a group of articles in the 1950s. During the 1950s, the content of these articles, which was simply programmatic, was largely expanded, made more rigorous, and presented in the form of a book which was completed
in 1960, sent to press in 1961, and due to appear in 1965. In recent years there have been further expansions and refinements, especially in the framework of differential description, language restrictability, typology of repetition, and in the field of mechanolinguistic method analysis, the general procedures of which had already been established (Language Teaching Analysis, pp. 453-463).

At the very outset it was evident that much of the confusion in the battle of methods was due to the way the term itself was being used. Administrators thought they could set up experiments to find out whether one method was better than another—whether, for example, the Direct Method was better than the Informant Method, the Basic English Method, the Mimicry-Memorization Method, or the Army Method. They did not seem to realize that, in each case, the term “method” meant something different, sometimes referring to what was taught and sometimes to how it was taught. Since the what and the how were not mutually exclusive, and features of one method easily combined with features of another, such proposals to discover the best methods by means of experimentation were virtually meaningless.

It was therefore necessary to limit the meaning of the term “method” to the particular set of materials to which the language learner is exposed—texts (including workbooks and readers), recordings (including tapes and disks), and pictures (including films and film-strips). The analysis of such sets of materials in language courses was termed “method analysis.” It is not to be confused with “method specification,” which tells how effective teaching materials are prepared.

0.4 The Principles of Method Analysis

Method analysis is the objective study of the basic constituents common to all methods and the measurement of all their factors. What are these basic constituents? What are the elements which all methods, by their nature, must contain—elements by which one method may be distinguished from another?

Methods differ in what they teach, the order in which they teach it, the way they convey their material and the way they convert it into a skill. In other words, all methods, whether good, bad or indifferent, must have a certain selection, gradation, presentation and repetition. Selection, because it is impossible to teach the whole of a language; we are forced to a limited choice. Gradation, because what has been chosen cannot all be conveyed at once; something must come before or after something else. Presentation, because what has been selected must be transmitted by some
means to somebody. Repetition, because in order to be acquired, a skill must be used. (*The Meaning of Method*, p. 3)

It is therefore through these four basic constituents—selection, gradation, presentation and repetition—that language teaching methods may be analyzed and measured.

1. SELECTION

The analysis of selection is the answer to the question, What and how much is taught?

Methods teaching the same language do not all teach the same things. This is even true of the beginning courses supposedly limited to the basic elements of the language. What is taught may depend on the purpose, level and duration of the course and, in each case, on the dialect, register, style and medium of the language.

To determine what and how much is taught requires a linguistic analysis of the material—a description of the phonological, grammatical and lexical units and structures included. Method analysis is thus dependent on linguistic analysis.

The first and most obvious question to ask in analyzing a method is, How much does it cover? How much of the phonology, grammar and vocabulary of the language does the method teach? In calculating the amount of phonology included, inventory is made of all the units and structures of articulation, catenation, rhythm and intonation taught through tapes, disks and sound-film.

The results of the phonological, grammatical and lexical computation may be expressed as percentages of the total number in the language as far as this is known. When we know how much of everything has been included, we next have to find out how useful it is.

The usefulness of an item has nothing to do with its facility. No matter how many easy items a method may teach a learner, he is wasting his time as far as learning the language is concerned if these are of no use to him. There are four measures of usefulness, viz. range, frequency, availability and coverage. The applicability of each depends on the degree of restrictability of each level of language and on the completeness and reliability of the statistics. The restrictability of an item may be anywhere from zero, as in the case of many phonemes, to more than 99% in the case of certain vocabulary items.

Fortunately, most of the language statistics and other indices are in the area in which the language is most restrictable, that is, in vocabulary. We already have indices of range and frequency for the vocabulary of
French, English, Spanish, German, Russian, Dutch, and other languages. Some are based on speech samples, some on written texts, some on both.

As for availability, there are figures at present only for French. As for coverage, there is as yet no index for any language, but some are being elaborated.

To calculate the usefulness of a selection we add and average the index figures for each class of items—vocabulary, inflections, structure words, etc.—to obtain the mean range, frequency, availability and coverage of the items included. The measures of usefulness of what is taught can be adjusted to the purpose and level of the course.

### 2. Gradation

In all methods, regardless of their quality, the items of the language appear in a certain order; each item also occurs in company with other items. This sequence and grouping of items in a method constitutes its gradation. An item may be a unit of one of the systems of the language, or it may be one of its structures. We may present the inter-relationship thus:

<table>
<thead>
<tr>
<th>Systems</th>
<th>Sequence</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structures</td>
<td>Which units come before which?</td>
<td>What goes with what?</td>
</tr>
<tr>
<td></td>
<td>Which structures come before which?</td>
<td>What goes into what?</td>
</tr>
</tbody>
</table>

#### 2.1 Sequence

Which units and structures come before which, and how many? Do the easier, more frequent and more useful items come before the difficult, less frequent and less useful?

#### 2.1.1 Sequence in the System

The sequences in which units of a language appear help determine the facility and speed with which the language is learned. Certain things come naturally before others because the latter are dependent on them. For example, surface nouns like table, shelf and floor might usefully be presented before the preposition on, since they help teach its meaning. Under this heading we analyze such things as the order in which the determinatives, regular and irregular inflections, and different types of words are first introduced.
2.1.2 Sequence of Structures

Sequences of structures differ in direction, expansion, variation and length.

The direction of a sequence of structures depends on where it leads. To lead up to a given structure by using a number of given elements it is possible to pass by a number of different routes. To go, for example, from a structure like *It's here* to the structure of the sentence *The keys are on the table* a sequence may pass through the structures represented in such sentences as *This is a key, The key is here*, etc. Or the sequence may proceed in the opposite direction.

A sequence progresses through expansion and variation. Methods differ in the extent to which they expand the number of units in a sequence of structures. Here is one example of an expansion: *He's leaving. He's leaving home. He's leaving home at noon. He's leaving home at noon today.*

The gradualness of the expansion depends on the extent to which the elements in each structure are varied before the next structure is introduced. For example, between the second and the third structure of the above sequence one might have: *He (She, It, John) is (was, will be) leaving (coming, going, driving) home (here, there).*

The length of a sequence depends on the number of expansions and variations in a given direction. If the direction of two sequences is the same, the longer one is probably the better graded.

A measure of the gradualness of a sequence is its rate of intake, which is an indication of how much comes in at a time. The general formula for intake is

\[
I = \frac{\text{Tokens (to)}}{\text{Types (ty)}}
\]

It applies to units and structures at all levels of language. At the lexical level, for example, it represents the number of running words divided by the number of different words. It also applies within each level. Verb intake, for example, is the total number of verbs in the text divided by the number of different verbs in the vocabulary:

\[
VI = \frac{V \text{ to}}{V \text{ ty}}
\]

It can be calculated for any point in the sequence. By calculating it for a number of points we get a curve of the rate of intake of any element or combination of elements.
2.2 **Grouping**

Methods group their items in different ways; not all groupings are equally effective. Grouping in the system is analyzed by techniques different from those used to analyze grouping in the structure.

2.2.1 Grouping in the System

An item in a language is learned by the company it keeps. It is learned better when grouped with some items rather than with others. At all levels of language we ask the question, What goes with what, and why? The question applies to all units in the system and to all relationships between them.

It applies to such semantic relationships as exist between prepositions and certain surface nouns, for example, between *on* and *table, shelf, floor, wall, ceiling*.

2.2.2 Groupings of Structures

To what extent are the units in a method grouped so as to fit into the relevant structures? For example, when the phrased structure *preposition + determinative + noun* (e.g., *on the table*) is first introduced, how much of the preceding vocabulary can it absorb?

The measure of a grouping is its productivity. Productivity answers the question, How much can you say with what you have? The productivity \((P)\) of a gradation \((G)\) is the sum of the productivities of all its sentence structures \((s)\):

\[
PG = \sum Ps_1 \ldots Ps_n
\]

The productivity of a sentence structure \((Ps)\) is the product of the productivity of each clause structure \((c)\) that fits into one of its position:

\[
Ps = Pc_1 \times Pc_2 \times \ldots \times Pc_n
\]

The productivity of a clause structure \((Pc)\) is the product of the productivity of each phrase structure \((p)\) that fits into one of its positions:

\[
Pc = Pp_1 \times Pp_2 \times \ldots \times Pp_n
\]

The productivity of a phrase structure \((Pp)\) is the product of the number of words \((Nw)\) that fit into each of its positions:

\[
Pp = Nw_1 \times Nw_2 \times \ldots \times Nw_n
\]

In comparing methods, however, total productivity is not alone significant since the difference may be due to the number of structures used. We get a better idea of the relative efficiency of the gradation by calcu-
lating the average productivity per structure, the median, and the degree of deviation, computed according to the usual statistical formula.

If we wish to know how well a method exploits its possibilities, we calculate its productivity differential (PD) by subtracting the actual, or textual productivity (TP) from the general, or combinatorial productivity (CP):

$$PD = CP - TP$$

But the productivity of each point in the gradation is different. It is useful to know at what rate the possibilities of a method increase. By calculating the productivity at regular intervals of, say, 500 tokens, we get a productivity curve representing the rate of increase in productivity.

If we wish to know the extent to which this increase is exploited, we superimpose at each point the actual number of sentences used, and obtain a second curve. The gap between both curves is a measure of how well the method exploits its possibilities as the course progresses.

3. PRESENTATION

Presentation answers the question, How does the method get the language across? A method may present all or part of the language, leaving the teacher the job of doing very little of the presentation, or most of it.

It is important here not to forget that it is not the presentation done by the teacher that is being analyzed, but rather that done by the method through its texts, films, and recordings. What is there to present? Either the method or the teacher must present both the form of the language and its corresponding semantic content.

3.1 Form

A method may present either the spoken or written forms of the language—or both of them—for purposes of expression or of comprehension only. In other words, a method may present any or all of the four basic skills—listening, speaking, reading, and writing.

Methods differ in the way they transmit the forms of the language and in the way they stage its basic skills.

3.1.1 Transmission

A method may transmit the spoken forms of the language through recordings on disk, tape or film. Some of these recordings present material which is not available in written form; others are simply recordings of all or part of the written text which appears in either orthography or in
The transmission of the written form has to do with the script or alphabet of the language and the spelling of its words. Methods intended for learners unable to read the script used may present it in a separate section, ranging from a single page to a whole book. Some methods make no systematic effort to present the orthography of the language they teach; others devote special sections to it either in their main text or at intervals in their workbooks.

3.1.2 Staging

Methods also differ in the number, order and spacing of the stages in which the basic skills are presented.

Some methods limit themselves to one or two of the basic skills; others may present all of them—listening, speaking, reading and writing.

They may divide the task into any number of stages, according to the components of each skill; for example, listening may be presented in such stages as: rhythm identification, phoneme identification, identification of phonetic sequences, auditory comprehension, tempo.

These stages may follow one another in a block or they may be interspersed throughout the phases of other skills, so that the learner may, for example, start on the first stage of one skill before having completed all the stages of the other skills, starting to read, for instance, before having covered all the stages of listening comprehension. The first thing to analyze, however, is the order in which the basic skills are first introduced. Is it listening (L), speaking (S), reading (R) and writing (W), or is it LRSW, or LRWS, or RLWS, or which of the other possible orders of staging?

The order in which skills are staged, however, is not the only variable; there is also their spacing. The question here is, How much of one stage before the next begins?

Staging may be measured by listing the number of stages in the order of their appearance and computing the number of tokens in each stage.

3.2 Content

As for the presentation of the content, there are four possible ways of getting meaning across. Only one of these, ostensive procedure, is not available to the method since it involves the use of actual objects, actions and situations. Any or all of the others—pictorial, differential and contextual procedures may be used by a method to convey the meaning of
the forms taught. In analyzing a method it is important to find out which of these semantic procedures are used, and in what proportion.

3.2.1 Pictorial Procedures

Some methods use pictures to get most of their meaning across; others make no use of pictures whatsoever. It is difficult and most time-consuming to determine exactly how much of the meaning in a method is taught through pictures. But a good idea of the relative importance of pictures in the teaching of meaning may be had by counting the number of semantic pictures and expressing the total as a percentage of the total number of word tokens.

3.2.2 Differential Procedures

Some methods convey the meaning of the forms presented by exploiting the differences between the language being learned and the native language of the learner. This may be done through translation and through explanation.

We may determine how much of these is used and the proportion of each by figuring the total tokens in the first or native language and expressing the results as a percentage of the total tokens in the text—exclusive of drills and exercises. Of the total tokens in the native language we determine what proportion is devoted to translation and what proportion to explanation.

3.2.3 Contextual Procedures

Teaching meaning through verbal contexts involves the use of known words to teach the unknown. Instead of checking every new semantic item to find out whether or not it is made clear by the surrounding words, we can establish a reliable notion of the relative importance of verbal context in a method by the use of two statistical measures: (i) How many units and structures first appear in environments in which all other items have already been used. In other words, how many unknowns are presented exclusively through the knowns. (ii) How many different items precede and follow each item taught. In other words, in how many environments does each semantic item appear. Both measures are necessary; applying only the first would, of course, be invalid.

4. REPETITION

The final distinguishing characteristic of methods is the way they convert into linguistic habits the material which they present. This is done through repetition.
Methods differ in the amount, ratio, type and variety of repetition which they use.

4.1 Amount

In measuring the amount of repetition in a method the actual number of repetitions must be distinguished from their distribution.

The number of repetitions may be calculated from the intake figures, dividing tokens by types to give the average number of repetitions per class—nouns, verbs, prepositions, etc.

The distribution is calculated by dividing the text into blocks of running tokens, the size of the blocks to depend on the degree of refinement required. For our purposes, blocks of 500 seemed to be the optimum. After determining in which block an item occurs for the first time, we find out the percentage of all subsequent blocks in which the item recurs, and its distribution.

4.2 Ratio

This has to be calculated by skill and by medium. What proportion of the total repetition is devoted to listening, to speaking, to reading and to writing? This is simply a matter of adding the number of tokens occurring in sections of the method devoted to each skill and of figuring the proportion.

What proportion of each medium of transmission does the method use? How much of the material appears in the form of recordings, pictures and printed texts? This is also a matter of adding up tokens and of figuring out proportions.

4.3 Type

There are four types of repetition—rote, incremental, variational and operational. What percentage of the repetition in the texts belongs to each type? This is a matter of adding tokens for each type and expressing the results as percentages of the whole.

4.4 Variety

How many sorts of drills and exercises does the method use? What percentage of the repetition is devoted to each? After counting the number of different sorts of drills and exercises used, we total the tokens for each and express them as percentages of the whole.

Figures for all factors are reduced to percentages, and plotted on a circular graph, producing a profile of the method based on all its measurable variables.
5. MECHANOLINGUISTIC METHOD ANALYSIS

After trying out the above analytic techniques on scores of methods, it became evident that a complete analysis could be done much better through the use of computers.

We therefore set about elaborating a procedure for converting these techniques into a system of computer programmes. This made it necessary to divide the operation into three stages—pre-editing, machine analysis, and post-editing. We were then able to program another machine to do part of the pre-editing, and found out that most of the post-editing could be done by a special graph-drawing attachment to the computer system. This makes it possible for us to feed an entire method into one end of our computer system and extract its profile from the other end. The profiles would look something like those in the following diagrams.

PROFILE OF METHOD A
The profile may be read in the light of the specific requirements of a given group of teachers and learners.

6. WHAT REMAINS TO BE DONE

We still need to extend and refine some of our measures and to find out the extent to which the teaching and learning of a language is modified by changes in each of the factors. It will be necessary to correlate each of these variables with those determined by similar analyses of language learning and language teaching, whenever these become available.

Once this is done we should be able to measure and to predict what sort of results a certain method may have on a given group of learners working for a given period of time under a certain type of teacher. When we can
do this it will be possible to put language didactics on a scientific basis. It is hoped that our efforts to establish principles and techniques of method analysis may in some measure contribute to this end.

REFERENCES

Although deafness presents special problems and teaching deaf persons offers wide scope for the application of linguistics, the deaf student in college and high school has exactly the same room for improvement in certain language skills as has his hearing counterpart. For, if the real numbers between zero and one represent degrees of language skill, zero of course represents no skill whatever and one is equivalent to (unattainable) perfection. One student's skill may be different from another's, say as 0.01 is different from 0.99; yet between each of these points and the number one there lie an infinite number of points. In having infinite room for improvement all possessors of any language skill are the same.

The language skills particularly pertinent here are, starting from the top, the ability 1) to compose discourse of quality and magnitude adequate to answer questions requiring both general knowledge and intelligently read specific materials; 2) to develop paragraphs that are more than mere collections of sentences; 3) to originate sentences appropriate to linguistic and situational contexts; 4) to construct grammatical sentences; 5) to produce grammatical, and reprocess ungrammatical, principal constituents of sentences; and 6) to select from a well-stocked memory words appropriate to the syntactic and semantic contexts of such principal constituents.

The native speaker with unimpaired hearing is expected to have begun moving up these stages even before reaching high school. But because there is infinite room for improvement in these skills and because the standard for judging proficiency in them is likewise variable, there is no need to abandon them as objectives for teaching the gifted student. And even if grammaticality were a strict matter of yes or no, human beings, like generative grammars, differ in efficiency of production.

The high school or college student who is not a native speaker but needs a native-like command of English is expected to master preliminary
audiolingual skills and a new writing system. Contrastive grammars and a wealth of machinery and printed material are available to help him.

However, between the deaf student's skills and the stages of skills named, there are gaps—gaps, that is, in the vocal-auditory symbol system. These gaps penetrate several layers of language structure. For the deaf student whose main detour around the auditory gap is lipreading, most of the phonemes of English are not phonemic at all. Here is the summary of a piece of linguistic research done at the John Tracy Clinic, where teaching the skills of lipreading and speech production to deaf children is a major emphasis. It deals not with repairing but with surveying this particular gap:

A research program has been set up to apply the theory and method of structural linguistics to an analysis of lipreading processes. As the first step, perceptual differences among English initial consonants were tested. Stimulus materials consisted of pairs of phonemically identical and minimally different nonsense syllables, which provided a constant, nonredundant linguistic environment for the phonemes tested. Stimuli were presented to 185 experimental subjects, normal-hearing adult speakers of English, by means of a silent film. The test was administered also to smaller control groups by presenting the sound track alone, and by showing the complete film with both picture and sound. In place of the 24 initial consonants tested, results indicate that only four visually-contrastive units are available consistently to the lipreader.¹

The partially hearing student, with or without electronic aid, may also fail to distinguish phonemes because there may be very slight phonetic or audible distance between two sounds that are phonologically different. But this person may encounter other gaps. He may fail at times to perceive anything to confuse with something else. Phonemes or sequences of phonemes under weak stress simply are not there for him.

The student for whom the language of signs is the main mode of interaction must come to English from a language in which verbs are not inflected for time nor nouns for number and in which an auxiliary verb, a negative morpheme, and a main verb—at least three morphemes in English—can be divided evenly into two, negative auxiliary and main verb.²

The deaf student whose teachers and fellows have always fingerspelled to him may habitually relax his eye-focus once the first few digital symbols


give him the lexical identity and before the inflectional or class deriving suffixes are signalled. For him a number of morphemes and syntactic systems may be confused or non-existent.

These gaps in the phonemic and morphemic systems are minor of course compared to the abyss that absence of the auditory function leaves. They are inherent in the substitutes used for the lost hearing, and they are troublesome enough, for they cannot be predicted and have not been explored by linguists or mapped except in the sketchy outlines presented here. It is reasonable to suppose that a combination of all or some of these substitutes: lipreading, residual hearing (and auditory training when appropriate), sign language, and fingerspelling should minimize the gaps. Such a combination is used at Gallaudet College, for only this simultaneous method of communication can reach students from every kind of methodological preparation. Working against an earlier use of multi-channel approaches, though, is the much to be deplored exclusiveness that advocates of each substitute system militantly maintain.

The gaps inherent in the substitute systems are widened and not repaired by language teaching based on misapprehension of the relation speech bears to writing and on ignorance of the arbitrary, symbolic, and systematic nature of language. Reminiscent of the "Secondary and tertiary responses to language" which Bloomfield quotes (Language 20.45-55 [1944]) is this statement in a text still used in some centers that train teachers of the deaf:

_The language of signs_ is another form of communication. This is a system of conventional gestures of the hands and arms that by and large are suggestive of the shape, form, or thought which they represent.\(^3\)

As much to be deplored is perpetuating, in teacher training and in classroom work with deaf students, the worst faults of traditional prescriptive grammar. The young hearing pupil may be confused and frustrated by what Miss Fidditch tells him about his language, but he has some defense. He knows what he hears. Outside the classroom he has the check of good solid linguistic reality on her absurdities. The young deaf pupil, however, has not the same language experience outside; and years later the deaf student may still be found using the fidditchisms he learned in school.

On the positive side, the deaf student who reaches college is one of nineteen or twenty in the educational output of his year instead of one in

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eight or nine in the hearing population. Both hearing and deaf college students are the cream of their age group, but the socio-economic-educational separator happens to be set now so that the cream is twice as rich among the deaf population. The deaf student's dependence on sight, moreover, has given him unusually good skill in spelling, and an accuracy in mechanical details that depend on eye-motor coordination. His exposure to mathematical symbolism is huge relative to his experience of vocal-auditory symbol systems. He therefore shows generally greater mathematical than language aptitude on standard tests and may have superior skill in handling abstract concepts, when they are presented in the precise and elegant language of mathematics. Of course possession of that language skill can handicap him with a teacher who says in effect: "When I use an abstract noun like myth, or democracy, or evolution, you must be thinking of the very same collections of concepts as I am or else you cannot think in the abstract." The deaf student is skilled in the ultimate abstractions: his visual perception of sameness and difference is preternatural.

The task of teaching him the six language skills under discussion here involves all the matters so far considered and many more, but the gaps in the vocal-auditory symbol system loom large. Major repair has to be made in morphology. He may be able to spell all the inflected forms of a noun or a verb but remain unaware of which to use in a given environment. He may have whole chapters of a traditional grammar memorized and score high on objective tests, yet, when he composes, make mistakes in concord, voice, number, tense, and order. He may connect many strings of letters with lexical meanings but perform most erratically in constructing grammatical sentences and principal constituents of sentences.

To teach him these skills it is first necessary to teach that there are principal constituents and how they function. When one has to speak and fingerspell simultaneously in teaching, the term principal constituent proves most cumbersome. We use instead, at Gallaudet, the term field. This has more than the obvious advantage of brevity. There is in American Sign Language a sign for 'field' (B B- L-), but it is most often used in the immediate language community to translate the academic phrase 'field of specialization.' It translates the English word major in its academic uses: as verb, 'to major in a field'; as adjective, 'major courses'; as abstract noun, 'what's your major?'; and as personal noun, 'a math major.'

The term field as a synonym for principal constituent has been given a new sign (L A- L A-), and a graphic symbol, the horizontal bracket ( ). Because fields as principal constituents are the largest parts into which a sentence may be divided, they are (with a few explainable exceptions) consecutive strings of words, zero or more words long, with well defined
boundaries. It is very convenient in teaching to use horizontal brackets
to mark fields on paper or on the blackboard.

There is a further advantage in the use of the term *field* for the syntactic
entity better known as the principal constituent. That is the advantage of
using a term for a concept or process isomorphic with the linguistic one.
In applied mathematics it is necessary to distinguish between data, the
contents of some part of a computer, and the container. The ultimate
unit of the container is the cell, which may contain something or nothing—an
electric or magnetic charge, usually, or its absence. Every number
and every other kind of information that a computer can handle is repre-
sentable in this binary code of something or nothing. Of course for some
data, many cells may be required. One cell can count only to two. Two
cells can represent 1, 2, 3, and 4 or else 0, 1, 2, and 3. Eight cells can
count to 256 and so on. A machine’s memory or storage must have a
great number of cells, but there must be a way of knowing for any given
cell if and how it is related to others.

Suppose it were possible to look at six adjacent cells in an actual
storage, and that they appeared like this (solid for something, one, and
open for nothing, zero): • ° • ° • ° •. There is no way of knowing what
number, if any, this string is supposed to represent. Only by specifying
the computer system’s “word” structure, the rules for reading cells and
“words,” can it have meaning. Suppose these six cells are in, or are, one
computer “word”: • ° • ° • ° •. Their meaning is either 37 or 41, depend-
ing on whether the system reads words from the left or the right. If they
constitute two “words” of three-cell length, read from right to left, the
words contain 5 and 1: • ° • ° • ° •. But there is still ambiguity: do ‘5’
and ‘1’ mean fifty-one or fifteen or the two numbers 5 and 1? The
answer to such questions is given by field specifications. If the system
reads words in a field from right to left, and if the six cells and two words
are now specified to be in a field also read from right to left, there can be
only one meaning, fifty-one: *

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• ° • ° • ° •
5 1
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* Actually fifty-one read out of three-cell words should be treated as an octal
number, since each word can contain no number larger than seven. Thus $54_8 = 41_{10}$
or 5 8's + 1 one. Likewise $15_8 = 13_{10}$. The argument that fields so defined are system-isomorphic with principal constituents is strengthened by adding the translation from
central to decimal symbol systems.
To represent fifteen in the same system, the string of cells must change:

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  1  5
```

Fields thus defined are free to vary in length. With different field boundaries, the original string of cells and words may represent five and one:

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  5  1
```

but with word and field boundaries free to vary, many combinations are possible; this for instance:

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  2  1, 0, 1
  21, 0, 1
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In this generalization and simplification of numerical logistics, several points appear that are eminently useful in teaching language skills to deaf students. First, a field—either a numerical field or a syntactic field—may be as long as the system specifies. Second, a field may be as short as one word—a computer "word" or an English word. Third, a field may be no words long. This, in the last diagram, is the same as an empty one-cell word. An empty field in English has no word in it, but the field remains as a place that could be filled. Hence, the principle in teaching syntax and morphology to repair gaps caused by hearing loss is that English sentences have at least three fields, nominal, verbal, or neither (N, V, or X):

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He saw the girl. She looked inviting.
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N  V  N  N  V  X
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He spoke. Ø  Ø "Come closer." Ø "Scram!" Ø
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N  V  X  N  V  X  N  V  X
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A corollary principle is that a field may be extended or expanded to any appropriate length by the use of explicitly derived rules. (Appropriateness is an extra-linguistic or meta-linguistic consideration which may also be made explicit in a well-designed program of teaching language skills, as John Gumperz and others on yesterday's panel made clear.)

For explaining subordination the three kinds of fields provide a better apparatus than do the terms phrase and clause and the Protean concepts they stand for. And for showing structure graphically, the field concept
symbolized by horizontal brackets is at least as effective as traditional diagramming besides leaving the sentence itself in normal order. Thus:

When he saw that the girl looked inviting, he spoke to her.

The major advantage is to give the student for whom intonation patterns are forever inaccessible a formal framework for the control of meaning that is in many respects isomorphic with mathematical systems he has learned. The native speaker of English knows the difference between the thin edge and edge, the, thin and the other four possible arrangements of these three words because he hears the stress, pitch, and juncture phenomena which make the thin edge a nominal field. By giving the deaf student a logical and mathematical explanation of field structure, it is possible to repair some of the gaps at the morphological level in the vocal-auditory symbol system. This may then help him to master language skills that allow him to assume a productive role in the educated class.
Language teaching in Britain is in the throes of a revolution. Revolutions often appear to those engaged in them as unco-ordinated, complex, untidy happenings. Consequently the description of the present state of language teaching in Britain is difficult to achieve, as much because of the complexity of the events as of their untidiness. Nevertheless it may be worth attempting a personal view of what is happening at the present time.

Britain has not in the past been noted for prowess in language teaching. Our well-known attitudes of political, social and economic insularity have traditionally been matched by our views on foreign languages. “Why can’t the damned foreigners learn to speak English?” was only half a joke expression; the saying that “The English can’t learn languages” reflected a hope on the part of many Englishmen that they would never have to. At the same time, the phrase was an excuse for the fact that on the whole we taught them pretty badly—not worse, one should hasten to add, than most of our near European neighbours, but certainly not as well as the Dutch, the Danes and the Swedes.

Those days are over, their passing hastened by the great social and economic changes of the past twenty-five years: by a familiarity with overseas travel and by the contacts with foreigners which the Second World War produced; by the vast expansion of the mass media of communication and especially the inclusion of Britain within a European television network; by the new habit of holidaying abroad; by the widespread showing of foreign films; by the internationalisation of government and of the machinery of economic control; by a massive expansion of foreign trade;

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1 The use of the term English here is deliberate, not simply an unthinking alternative for British. The Welsh, the Scots and to some extent the Irish have different and more xenophilic traditions. However the trends and changes reported in this paper are taking place equally in England, Scotland and much of Wales.
and not least, by a rise in the general level of education, which has turned people towards a more international outlook.

It is hardly surprising that the acceptance of greater contact with foreign countries and therefore with foreign languages was followed by a rapid and drastic rise in the number of people required to operate at the points of international contact. In industry, commerce, government, science and education the same sudden need has arisen: more people are needed, with a better practical command of a wider range of languages, than ever before. These are the pressures behind the current revolution, and these are the demands that the language teaching profession must make itself capable of meeting.

In beginning to meet these demands, two main kinds of trend can be seen. The first concerns organisation; the changes now occurring have their symptoms in higher education, in the school system, and in the national and professional bodies. The second main category relates to the principles, techniques and methods that are coming into use. In both of these fields, similarities with events and solutions in America will be evident, but so also will contrasts and differences.

**ORGANISATION**

1. Higher Education

The pattern of foreign languages follows similar lines in most British and American universities. Given the resistance to change that universities display it is not surprising that it is in the new universities that the most radical changes are taking place. The arrangements at Essex are sufficiently like those planned by York, Canterbury and Warwick for them to serve as an illustration of a new pattern.

Instead of separate departments of French, German, Spanish, Russian, etc., each of which teaches a degree in literature and philology, Essex has created a Department of Literature (under Prof. Donald Davie) which concerns itself with literature in many languages, and a Language Centre which contains the whole of the university's provision for the study and teaching of languages. The teaching of particular languages (at present Spanish, Russian and French; next year also Portuguese and German)

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2 British universities fall into a small number of main groups: Oxford and Cambridge (the "ancient" universities, sometimes referred to as "Oxbridge"); the Scottish universities; London, which is *sui generis*; the civic universities, mostly founded in the late 19th or early 20th century and sometimes referred to as the "redbrick" universities; and the "new" universities, founded since 1945—some of them indeed still in process of being founded.
to undergraduates is one of the functions of the Centre; research in linguistics and in particular languages and the development of improved teaching materials is another; a third is professional and vocational courses (such as a one-year M.A. in Applied Linguistics, for teachers of foreign languages and of English as a foreign language); and the fourth function is the provision of "external" courses in languages, for industry, or for other groups of learners over and above the full-time internal students.

The language instruction given in our Centre differs in several ways from the standard kind of university programme. In the first place, we accept students with no previous experience in a given language, which ought not to be a novelty, but is. In the second place, the aims of the language teaching are practical. Students are being taught to use the language, though the precise terminal skills we aim at vary from one course to another. Thirdly, a language is taught as a gateway to other disciplines rather than as an end in itself. For example, a student may be learning Russian because he is studying Russian as well as English literature; or Spanish because he is studying politics and government in Latin America; or French with a view to a research project in sociology to be carried out in France. Fourthly, the approach to the study and teaching of languages applies the findings of modern linguistics and psychology whenever they are relevant: the study of the present-day language by the use of linguistics has replaced in our curricula the study of historical forms of the language by the use of philology.

Similar patterns of foreign language teaching can be seen in several of the new universities and in some of the colleges of advanced technology now emerging into university status. These institutions are providing a long-term solution to our shortage of people capable of using a foreign language. But there are many thousands of individuals whose education occurred at a time and in a place where the new facilities did not exist. For them the colleges of further education and local evening institutes and technical colleges supply a great many practical language courses.

2. Schools

Until very recently the teaching of foreign languages in our State-maintained schools was confined to the grammar schools, and to only a fraction of the children who attended them. In practice this meant that probably less than 25% of British children ever received instruction in any modern foreign language. What they received was often a pale reflection of the kind of course given in universities, with the study of literature representing almost the sole justification for encountering the language at all. The
average standard of achievement in the language, especially the spoken language, has often been described as disastrous.

The major change in this area of education is a sudden, explosive development of foreign language teaching in the primary schools, to children between the ages of 7 and 12. In 1961 there were perhaps twenty or thirty primary school children in the whole country learning a foreign language; the current number is of the order of five thousand; the Department of Education and Science (i.e. the former Ministry of Education) estimates that by 1967 the number will reach 100,000. There seems every chance, in fact, that within five years a foreign language (which will almost always be French) will be taught to every primary school child in England and Scotland. Once this occurs, the whole shape of language teaching in the schools is bound to change.

At present the grammar schools receive only children with no knowledge of French; but when all the pupils entering grammar school already possess a grounding in spoken French the school's task is radically altered. So also is the position of other languages in the same schools; while other kinds of school, which until now have taught no foreign language, will have to think again about their curriculum. The teacher training colleges, too, have already had to begin to provide professional courses for those non-graduate teachers who will now be teaching French.

This is a major component of our language teaching revolution, and its effects can only intensify the process of making the English almost multilingual.

Primary school language teaching began as an experiment; it quickly grew into a series of unco-ordinated wild-cat schemes; at one point the enthusiasm of teachers and parents had pushed so far ahead of the supply of adequate teachers or classroom materials that a large number of rank bad examples were in existence which were threatening the general reputeability of primary school French. The way in which the situation was rescued illustrates another of the main threads of the current revolution.

The Nuffield Foundation financed in 1962 the preparation of a Report on the current state of affairs. This revealed that both excellent and appalling teaching was to be found, and it also stressed the two main difficulties, which were, first, a shortage of suitable teaching courses and materials, and second, a lack of facilities for training the relevant teachers. At this juncture, largely through the initiative of Her Majesty's Staff Inspector for Modern Languages, Dr. D. C. Riddy, and the Director of

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the Nuffield Foundation, a joint scheme was set up between the Foundation and the Department of Education and Science. The Foundation created a team to work as a matter of urgency on the preparation of courses, tapes, visual aids, and a teacher's manual. The Department designated a range of some 200 schools in selected areas (although far more than 200 applied to be included) and began an intensive programme of in-service training for the teachers. The Department of Education decided that it was essential that French in primary schools, if it was to be done at all, should be done properly. Their initiative in setting up an official Pilot Scheme will ensure that there will be no excuse for poor teaching of French at the primary level.

3. Other Organisations

Britain has no NDEA. It has no Center for Applied Linguistics. It has no central control of education. The result of these facts is that we lack the finance and to some extent the organisation which are necessary to carry out the collection and dissemination of knowledge about progress in language teaching and the sponsoring and co-ordination of research. Fortunately, the body of professionals known as Her Majesty's Inspectors of Schools (who are appointed by the Crown, and who can influence teachers only by requesting and advising them, not by requiring and controlling) have been in the forefront of progress as far as schools are concerned. In addition to them, four important bodies should be mentioned.

The first is the Nuffield Foundation, whose interest in primary school language teaching has already been touched on, but which has helped in a great many other ways. Their present annual level of expenditure on modern language teaching and linguistics is running at around a million dollars, which by British standards is an extremely large sum for educational purposes.

The second is the National Committee on Research and Development in Modern Languages, a government-appointed body with the duty of coordinating and sponsoring efforts in this field. They are at present in approximately the position of the American Modern Language Association in 1952: that is to say, they are trying to find out just what the present situation really is and what institutions are teaching which languages, to which pupils, using what materials, with what degree of success, and with what major difficulties. At the same time they are already making grants for specific research projects. It may be that this Committee will eventually provide services similar to those which make the Center for Applied Linguistics such a valuable asset in America.
The third is the British Council, specifically its Education Division and the English-Teaching Information Centre which that Division maintains. For some two or three years before modern language teaching in Britain was influenced to any extent by modern views on applied linguistics and the use of equipment, the teaching of English as a foreign language by and through the British Council had been largely reorganised along modern lines. The British Council does not itself undertake a great deal of direct teaching of English overseas, but it supplies professional advisers, it recruits English teachers for overseas posts, and it supports courses in British universities which train teachers or teacher-trainers in this field. It is largely due to the efforts of Dr. A. H. King, Controller of the Education Division, that there now exists a policy about the professional training of teachers of English and the resources for training and sustaining them. Among these resources one must count the English-Teaching Information Centre, which plays a valuable part in collecting and disseminating professional information.

Finally under this heading we should mention the professional bodies. The British Linguistics Association, though a plant of recent growth, is flourishing and will doubtless become a major influence. An Audio-Visual Languages Association is doing a useful job in coordinating experience and knowledge about language laboratory teaching and audio-visual aids. The Modern Language Association still caters largely for those school teachers (the majority) who teach conventional courses by well-tried and orthodox means, but there are signs that it may be on the brink of embracing more radical views.

Perhaps the most far-reaching new organisation is not strictly a British body at all, but a mainly European one. L'Association Internationale de Linguistique Appliquée was established at a meeting at Nancy in October 1964. Already national Associations of Applied Linguistics have been formed or are planned in a dozen countries, and while it is too early to predict the final outcome I suspect that l'AILA will be a most powerful influence for spreading new principles and methods in foreign language teaching.

**PRINCIPLES, TECHNIQUES AND METHODS**

1. *Applications of Linguistics*

It is hardly necessary, after the presence at Round Table Meetings in recent years of Professor Frank Palmer and Dr. Michael Halliday, to expand upon the fact that a "British School" of linguistics has evolved within the past five years. If we take as a rough index the number of
university staff employed full-time on work in linguistics, the increase is from about 15 people in 1960 to about 50 in 1965, while the number of universities with serious programmes in linguistics has risen from three to eleven. Chairs in general or applied linguistics (including Contemporary English where filled by a linguist) have been newly created since 1960 in the following universities: Bangor, Birmingham, Edinburgh, Essex, Leeds, London, Manchester, Newcastle, Reading and York.

Building partly on this surge of British thought in linguistics, partly on American theory and practice, and partly on French and other European developments, the notion of applied linguistics, especially in the field of language teaching has begun to be accepted in Britain. The leading centre, and for some years the only one, was the University of Edinburgh, whose School of Applied Linguistics under Ian Catford (now Professor of Linguistics at Michigan) was the main inspiration in this area of study.

2. Techniques and Methods

By far the most radical change has been in the acceptance of new aims in language teaching. Foreign languages are no longer available only in a "package deal" with literature and/or philology. Second only to this has been a new emphasis on practical ability in handling the language, and above all the spoken language.

Most teachers now accept that there is benefit to be gained from the use of aids and equipment, that far from damaging his pride by using recordings or equipment, the teacher may improve the effectiveness of his teaching. (This is a change in attitude whose difficulty Americans can hardly guess at.) Language laboratory techniques and audio-visual teaching are now pretty widespread in Britain. However, language laboratories are generally regarded somewhat differently: the average British teacher sees a language lab as first and foremost a specially-equipped classroom, and only secondarily as a kind of "reference library." One effect of this has been to keep the usual size of laboratories down to roughly the size of an average class, rather than to build large-scale installations; another effect has been to keep the teacher located at the front of the class, with eye-contact to every student. There have been some experiments with

\[4\] I have been struck by the relatively much smaller interest in audio-visual techniques in the United States. The reason may lie in Europe's greater familiarity with the highly successful audio-visual courses produced in Paris by C.R.E.D.I.F. and especially the pioneer audio-visual French course for adults, *Voix et Images de France*. Another reason may be the European preference for teaching that involves the teacher and his mistrust of a method that seems to reduce his own function.
television teaching. Both the commercial companies and the BBC have produced some excellent television programmes, while the BBC is at present conducting a promising experiment in which a radio programme is matched by simultaneous projection of film-strips by the teacher in the classroom.

The television and “radiovision” experiments, the French audio-visual courses, and indeed the entire profession of teaching English as a foreign language, lean heavily on the notion of situational teaching. Perhaps for the reason that they are “decontextualised”—out of situation—we have never accorded a major place to intensive drills and pattern practice. We do include them, of course, but not to the extent that American courses do. This idea that all language should be taught in a meaningful context is not new, but its acceptance in foreign language teaching is a rather recent trend.

It is of course difficult to keep one’s teaching realistic and meaningful throughout a long course. Like American teachers, the English are at last discovering that language laboratories and other aids can take the drudgery out of language teaching and release the teacher for more productive use of his time. But there is a distinct difference in the two views of where drudgery begins. The British (and indeed, the European) teacher does not believe that drudgery is in fact necessary. He is trained to take pride in a continual search for variety, for interest, for ingenious ways of practising language without resorting to forms of drill that might induce boredom. He does not always succeed, but the fact that he is trained to try may in part explain the teacher-centered nature of British foreign language teaching and the relative infrequency of do-it-yourself materials.

Things are happening in testing. A research team at Birmingham has just completed work on a test of attainment in English which will in principle be administered to overseas students before they leave for Britain, and which will probably become part of normal selection procedures. Testing foreign languages is less far advanced, but the example of the MLA Tests will undoubtedly affect us in the near future.

What of research in general? When set beside the formidable lists of projects financed by NDEA the British effort appears tiny. Indeed most of the existing research work is within phonetics, or descriptive linguistics, or English studies which I will not discuss. But the picture is changing. Already the Nuffield Foreign Language Teaching Materials Project is producing results. Birkbeck College, London is setting up a major research centre with linguists, language teachers and psychologists collaborating together; the University of York has research plans; my own Language
Centre at Essex has a major grant for a project on contemporary Russian; Dr. Halliday's Communication Research Centre has a number of massive schemes in hand. Within the next 18 months it should be possible to discern some important main lines of British research in this field, even though at present the effort is scattered and largely in initial stages.

The revolution is on. It has come later in Britain than it did in the United States, and it has a number of individual features, but in general it is following much the same lines. Foreign language teaching is a long way from being perfect, but it seems to be becoming much more effective.
THIRD PANEL: TEACHING LANGUAGE SKILLS

DISCUSSION

Chairman:
Jacob Ornstein
Graduate School, U. S. Department of Agriculture

Panelists:
Carl A. Lefevre
Chicago Teachers College North
William F. Mackey
Laval University
William C. Stokoe, Jr.
Gallaudet College
Peter Strevens
University of Essex

Discussants:
Victor E. Smilgin
Georgetown University
Robert J. Di Pietro
Georgetown University
Earl W. Stevick
Foreign Service Institute
Rev. Renzo Titone, S. D. B.
Georgetown University
Wallace M. Erwin
Georgetown University
Hans Glinz
University of Bonn
Rita Cook
Fairfax County (Va.) Schools
Robert Rainsbury
New York University

MR. ORNSTEIN: In 1937 I had the privilege of hearing Leonard Bloomfield speak at the University of Chicago. He was blasting and flailing the educationalists. I was reminded of this when I was trying to think of something to say to put this morning's panel into historical perspective. Linguistics has
grown and become much more complex in the past thirty years. We're involved in mechanical translation, language planning, sociolinguistics, and so forth; and still teaching is our bread-and-butter subject. I expect 95 per cent of us make our living by teaching. Moreover, people in other disciplines want to know what linguistics has to offer them. I think this morning's session has shown a broadness of outlook applied to various kinds of language teaching. And now for questions from the floor.

MR. SMILGIN: Professor Lefevre, one of your fourteen points was that language interference must be avoided or overcome. This is the negative side of transfer of habits in a new learning situation. But there is also a positive side. In learning a new language there are things that can be learned with a minimum of effort because they are similar to things in the student's native language. I think you neglected to mention this positive transfer.

MR. LEFEVRE: Your point is very well taken, of course, but the reason for this apparent neglect on my part is that the whole context of my talk had to do with pointing out the unique character of developing language skills in the native language. Developing literacy in the individual's first language is qualitatively different from teaching him to read and write a second language. In the native language the audio-lingual base is established, ready to interrelate with the manual-visual system; in the second language everything must be learned from the beginning, and interference from the native language must be overcome. I didn't mean to suggest that there are no similarities between the two kinds of learning, but in this context I'm trying to develop a greater awareness on the part of all of us of the difference between trying to develop skills with the native speaker and trying to teach another language.

MR. DI PIETRO: Professor Stokoe's paper was very edifying in many ways. I was especially interested in his correlation of "field" with tagmemics and transformational grammar. I would like to ask if he would consider tagmemics more appropriate to his analysis than transformational grammar because of its "linearity." Could Professor Stokoe expand on ways to show depth in derivational relationships of phrase structure (which is of interest in linguistic analysis) in terms of the field approach as he has outlined it here?

MR. STOKOE: First, I think that in working with the deaf student toward the usual objectives of college courses in composition and language study, one of the difficulties to be overcome is a false linearity imposed on the student by the kind of teaching which concentrates on the individual word in isolation. It is the word in patterns, in phrases, and in complete sentences—or what I call "fields"—that matters. Something like a tagmemic analysis seems most useful, for the students we're working with, to show the principal constituents of a sentence. After tagmemic cuts have been made, the expansion or reduc-
tion of fields and the equivalence of different fields may be understood through transformational analysis.

**MR. STEVICK:** The key word in my question is "de-lexicalization." Mr. Mackey has distinguished between usefulness and facility, the usefulness of something to be learned and the ease with which it can be learned. Mr. Lefevre has stressed the importance of whole utterance, as opposed to individual words. The question of usefulness is very important. Some words are more useful than others, generally, but there is also a local differentiation in usefulness. I would like to ask Professor Strevens if there is any possible value in writing a language course with blanks in it—blanks in dialogs or blanks in writing exercises—which would be filled in by the instructor according to the local situation. If the dialog dealt with going to a restaurant, for example, the instructor would use the name of a local restaurant, and so forth. Is it possible that delexicalization of materials in this way might be one way of avoiding de-contextualization in teaching?

**MR. STREVENS:** Yes, this is the kind of exercise, I should think, which comes at the upper end of the consolidation phase of language teaching. Language teaching begins with a stage where everything is new—phonological patterns, lexical items, grammatical patterns. This passes, and you get to the stage where you are giving students lots of practice material and lots of opportunity, not only the opportunity to make mistakes, to hear and correct themselves, but also the opportunity to become habitual in what they are doing. At this stage teachers are always trying to find new kinds of activity. I should think this suggestion is a very good way of producing a kind of exercise with local interest and of producing interest again and again, with change of pace and change of tempo.

**FATHER TITONE:** I was impressed by the beauty of the design offered to us by Professor Mackey for method analysis. However, I was struck by the persistent emphasis on a restricted concept of method, reduced to the mere objective dimension, that is, to the application of linguistic data to language teaching. This would take us back, I believe, to the days before Harold E. Palmer, who expanded on the necessity for the psychological dimension in his books, *The Scientific Study and Teaching of Languages*[^1] and *Principles of Language Study*.[^2] I believe we must consider this psychological dimension—the psychology of second language learning—as very important. Then we must also take into account the cultural dimension, which is both objective and subjective. Finally, there is the experimental dimension. I want to ask Professor Mackey how far experimental investigation has confirmed or supported this concept of method analysis.

MR. MACKEY: Let me answer in two parts. First, any dimension can be included in method analysis provided (1) that it can be analyzed, and (2) that it can be quantified. Second, some psychological dimensions have nothing to do, at the present time, with method analysis, but with language-learning analysis. A particular textbook, for example, might be very interesting to one class but lacking in interest for another class. This is a matter not of method but of psychological factors such as interest and motivation, which remain to be quantified.

Experimental evaluation would seem to be a matter of weighting the various factors. We consider about 52 factors in analyzing a method, and the method profile shows the extent to which these factors exist in a given method. But we don't know, at the present time, what weight to give to the factors. We can not evaluate methods at the present time; we can only analyze them. Teachers who know what they want to do and what their students need can use the results of our analysis to choose one method or another. I don't know if a general evaluation of methods is possible.

MR. ERWIN: There has recently been considerable public discussion about teaching reading to very small children, two or three years of age. I'd like to hear Dr. Lefevre's comments on this matter in general, and also his comments on the following specific question: Assuming, as I think most of us do, that a child should be taught to read only at a level which he has already attained in speech, is there a linguistically valid reason for delaying all reading instruction until the child has mastered the total speech system, more or less, as he generally does between five and seven years of age, or might it be desirable to let reading instruction follow oral achievement step by step during all those early years?

MR. LEFEVRE: These are both pretty large questions. I am familiar with two systems of teaching very young children to read. One is the electric typewriter system of Omar Khayyam Moore, which is not likely to spread very far because it's terribly expensive. Then there is another method which begins by teaching children at a tender age to differentiate very large capital letters. This depends more on the mother's motivation than that of the child. I'm convinced that some mothers have taught their children to read this way, but I wouldn't like to generalize very far. How many mothers have sufficient motivation? What happens if the child is driven beyond his own motivation?

The other question is a very rich one: Should we try to let reading instruction follow along one half-step behind the child's ability in speech? This is another of those questions where you come back to the individual. I don't think there is any single answer. Some children learn to read before they go to school, and they learn by different methods. Many children learn to read by having adults read to them. Some children watch television and learn to recognize the name of the brand that has the prize in the package, and later they can find it on the shelf in the supermarket. Language learning is a thing
that must be internally motivated. I think that we ought to be guided by the individual motivation of the learner.

MR. GLINZ: I have only one thing to ask Dr. Mackey. In your attempt to quantify, how do you count units? The German preposition mit is only one word in a layer of formal units; but consider: Er arbeitete mit seinem bekannten Assistenten, Er arbeitete mit seinem bekannten Apparat, Er arbeitete mit seinem bekannten Fleiss. Here, in terms of learning a language, there is not just one word, but three. In the theoretical framework which I use there is one unit on the morpho-level, three or more units in the nomo-layer. It seems to me better to count slots within structures than to count units as mere units.

MR. MACKEY: In my paper I didn't mention how we handle semantics; let me do this now. The question of polysemy is one of the most important things in method analysis—you have to figure out what meanings are introduced before what other meanings. If you count by hand, you know the meaning in which a particular lexical item is being used and you can number the meanings in your count. But this kind of counting is extremely time-consuming. With computers we have to find more objective ways of determining the units. One way is to consider whole collocations as single units; for example, we take collocations from some of the idiom lists that have been done for French and feed them into the machine as single items. When this doesn't work, we study the environment of the word and try to determine if it can be categorized differently according to whether it is followed by some sort of noun, verb, adjective, etc. We also compare each item with semantic word counts that already exist. For written English we have the Thorndike-Lorge count 3 which has been condensed into a handy form by Michael West.

DR. COOK: Some students with normal hearing seem to have gaps in the vocal-auditory symbol system when it comes to learning a foreign language. Could one apply some of Professor Stokoe's results in teaching with such students?

MR. STOKOE: Yes, there is a parallel. I've been set straight several times by linguists that speaking of gaps is only metaphoric. The person who has not heard a language because he is deaf and the person who has not heard it because he is a speaker of another language are likely to be similar in their inability to perform certain tasks, in their lack of certain skills. In free composition both are apt to make mistakes in the use of structures which the native speaker

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with normal hearing would not make. But the parallel can't be pushed too far, because we can correct the mistakes of the foreign language learner through audio-lingual drills, something not possible for the deaf student. Then, too, the mistakes of a student learning a new language may be due to the influence of his native language, which may be the language of signs for the deaf student. Very often, I think, part of the job of repairing the gaps for both is to undo some of the work of mistaken teaching that came before.

MR. RAINSBURY: Professor Lefevre, you speak of learning to read as a kind of language-related process. I wonder if you agree with Charles C. Fries that learning to read is essentially acquiring a decoding process—that is, the child learns to translate symbols on paper into the language which he already knows.

MR. LEFEVRE: I agree that when one reads he decodes a message which is represented graphically. I don't agree with Dr. Fries that the emphasis in the decoding process should be on a specialized word method. I am very much impressed by the over-riding character of intonation in English, its importance for communication, and the early age at which it is acquired by the child. I hope to encourage research that might show a direct connection between the individual's grasp of intonation and his ability in silent reading. I am interested in the decoding process that gets up at least to the sentence level, even in primary reading.
CLOSING
LUNCHEON
ADDRESS
THE ROLE OF THE CENTER FOR APPLIED LINGUISTICS

MARTIN JOOS

Visiting Director, CAL
On Leave, University of Wisconsin

The CAL as a working organization is just over six years old now, and the chances are that only a small minority of this audience were unaware of its existence before reading my title in the printed program. Indeed, probably about half of the audience are on the mailing list of the Linguistic Reporter, which the CAL mails free, six times a year, to over 14,000 addresses at home and abroad, and the rest can get onto that list by simply requesting it in writing. Accordingly, one would suppose that the work of the CAL, its role in the economy of the nation and in the affairs of linguistics and of language teaching, was sufficiently known and my report would be unnecessary here. Well, it ain't necessarily so.

The Linguistic Reporter contains 8 pages, and sometimes 12, of fairly small print in three columns. A good many of my acquaintances read it right through six times a year. I have asked a few of them what they think the CAL does, and how large its staff is. The typical answer from those who do not reside in the Washington area is that a staff of five would be about right, and that they have never asked themselves what the CAL does beyond what appears in print there. The correct answers are what you will get if you multiply that estimate by eight or ten. The "core" staff of the CAL is about 40 persons, apart from about ten others who work on marginal tasks. And the kinds of tasks that are publicly visible in the Linguistic Reporter are about one-tenth of the kinds that the CAL performs. Finally, the total amount of CAL work is certainly less than one-third, perhaps only one-tenth, of what it would be doing if it could meet all the demands made upon it more or less reasonably; and the chief reason for that is that the CAL does not do anything for which another institution exists that could do it tolerably well at all: the CAL does not conduct classes, it does not compete, it does not duplicate existing functions, and it does not maintain an activity once that activity can be taken over by others.
That is what makes the CAL particularly hard to describe. When we are asked to describe something, we usually do it by comparing it with other things familiar to the questioner, and by measuring the differences on well-known measuring-scales. I have never visited Brandeis University, but I think I understand fairly well what it is: it was founded not many years ago, it is not a state university but is instead supported by philanthropic gifts and of course student fees, surely a great deal of its support comes from sources that can be guessed from the fact that it is named for a distinguished Jew but it has an entirely secular atmosphere and of course an extremely “liberal” one, it is coeducational, and so on. If I am wrong about any detail any knowledgeable person can correct and fill out the picture for me in a few minutes. And all this is possible because Brandeis University can be compared to other schools. Hardly anything of the sort can be done in describing the CAL, because by its very definition it cannot be compared to anything else; for as soon as you are able to compare anything the CAL does to what other institutions do, it will be time for the CAL to quit doing it, just as it has quit doing certain other things. In short, to describe the mission and the work of the CAL, we must start from scratch.

The CAL was created, and continues to grow and to shift the choice of tasks within its general mission, in order to cope with certain cultural lags. We are accustomed to deplore the existence of cultural lags, but let me suggest that life would be a great deal less interesting without them. Cultural lags are the natural concomitants of cultural change. It is cultural change that creates the lags, because the changes never keep step with each other; and if the average speed of cultural change is doubled, the total amount of the various cultural lags taken together is probably more than quadrupled. Because of our personal and professional interests, speaking just of us in this audience today, the greatest interest of all attaches to the disproportionate maladjustments, and the frantic efforts to readjust them, that derive from the fact that right now is a period of even more rapid change in matters of language than the general change in our culture, rapid and accelerating as that general change is at present.

The whirlwind of activity may be even stronger next year, I don’t know; but when I say “right now” I mean the period that began, not by coincidence, quite precisely one year before the CAL was established and began its work, and which even today is a period of still accelerating activity in language work. If there was a coincidence in this picture, it was that certain people, notably Mortimer Graves, had foreseen it in outline twenty years earlier and had begun to work on the roof before the storm began.
The Modern Language Association's leadership took up the work promptly after the war, and in 1952 established its Foreign Language Program, which six years later was the decisive factor in causing foreign-language teaching to be included in the first NDEA of 1958 side by side with mathematics and the natural sciences: without that, it is as certain as anything can be in politics that the cultural panic which the Soviet Union caused in the United States with its first Sputnik would have generated an NDEA activity excluding foreign languages as it still, in principle, excludes the humanities generally, and confined to what the public calls "science" including mathematics.

I don't need to recite to this audience the story of the publicly visible language activities that began in 1952 and the others that began in 1958; I can assume that you have a sufficient awareness of them. My task is rather to speak of what went on and still increasingly goes on behind the scenes, for behind the scenes is where the CAL does nine-tenths of its work, the nine-tenths that are not displayed on the pages of the Linguistic Reporter. That same year, 1958, was when the first CAL plans were crystallized and the money was found to start the work. The Ford Foundation, which has its own Board of Overseas Training and Research and had both keenly observed and in certain respects paralleled the language parts of the Fulbright programs, was especially interested in the teaching of English as a foreign language abroad, and it was that specific interest which did most to persuade the Ford Foundation to put up the money for the CAL in 1958 so that it was able to start work in February of 1959, when the CAL Director, Charles A. Ferguson, took leave from his post at Harvard at the end of the fall semester.

The first definition of the CAL mission was that it was to be a clearinghouse for information in linguistics and in language teaching, a central body where information is gathered, sorted, stored, and disseminated by any and all techniques; and the Linguistic Reporter is only one of those techniques. If I were to give you a list of the other techniques used or in prospect so far, I'm afraid you would not be able to understand the list: each item on the list demands its own explanation. What I had better do instead is to describe a number of typical tasks and projects, and then try to sum up.

First, bits of information either singly or in small packages. The CAL receives a number of inquiries in the mail every working day, perhaps one a day from an institution as such, a college or a government department, but most of them inquiries from single persons. The variety is enormous; the inquiries are as different from each other as the questions
that children ask in their pre-school years, so that we get the impression
that the public is by and large just about as sophisticated about language
and linguistics, and about what sorts of questions can be answered at all,
as so many dear, sweet four-year-olds. One correspondent has heard that
there are twice as many languages in the world as the number of members
of the United Nations, and asks whether that can possibly be true; I'm
sure that my answer that there were not only twice as many but roughly
forty times as many was shocking to him, but I am not at all sure that
he believed me. Another offers us a new phonetic alphabet and is sure that
if all languages were written in the same alphabet they would be mutually
intelligible if it was a really good alphabet; and it was not much better than
that when the Public Trustee wrote for help in implementing one of the
provisions in the will of George Bernard Shaw, so that it is a special
pleasure to be able to report that when the Deputy Keeper of Botany of
the British Museum wrote for help on biological nomenclature he made
perfect sense in his letter and it was possible to answer him usefully.
What did we answer? We referred him to H. A. Gleason, Jr., of course.
Both the Englishman and the CAL were lucky that time; the unlucky one is
my good friend Al Gleason, for he either had to turn the man down or
involve himself in a lot of distracting work. Usually we haven't got the
answer.

At the CAL we are most of us distracted, or distraught, most of the
time. The demands are endless in bulk and in variety both, and we must
pick and choose what to do. In principle, we respond to every inquiry
or request, and sometimes we can respond usefully, sometimes (though
rarely) quite satisfactorily. We are expected to know everything and
everybody; and because six years of experience have taught us what kind
of information we both can and ought to collect and have ready, we really
don't do too badly. Yet we cannot even satisfy half the reasonable requests,
for more than half the time the requisite information has not yet been
generated, let alone collected and sorted. Consider, for example, the case
of the teaching of English as a foreign language: consider the problem
as a whole and in detail, not to solve it but simply to determine what
the problem is and whether it can, in principle, be solved at all.

In Japan, more than one person in a thousand is a teacher of English
today; that sounds like a small fraction, but it meant about 90,000 teachers
of English a couple of years ago and surely over 100,000 today, all but
a few of them native Japanese and keenly conscious that what they speak
doesn't sound very much like any kind of native English. They would
like to have at least one-tenth as many native speakers of English to work
with them and spend a few years upgrading the English of the Japanese teachers; or, since that is clearly impossible, some magical method, preferably called "linguistics," to enable them to get along with the few competent English and American people they can get. Japan is an outstanding case; but the world as a whole, or even that part of it which lies outside western Europe and the English-speaking nations, adds up to about ten times the Japanese demand for that kind of service. That is the demand end of the picture; now consider the supply end. You surely know that the competent native-English-speaking teachers of English as a foreign language are very few in comparison to that demand. Therefore, if we are to go any considerable distance towards satisfying the demand, we must find native speakers of English who can be persuaded to teach English but have never taught English to those for whom it will be a foreign language; they must be trained somehow, of course, but before they can be trained they must be found. They must be discovered, personally and individually identified. How would you go about it?

It is easy enough to say that a questionnaire could be broadcast in a million copies, or perhaps a hundred thousand copies would be enough if addressed to a suitable list of addressees. Yes, come to think of it, a hundred thousand would be the limit that could be handled when they came back in, for handling that many would take a year for a staff as large as the present CAL staff, all working on that and nothing else, so that we'd better get another million dollars and hire another staff and rent another building: it would only need to be a four-story building if it covered enough ground, or two floors of the east wing of the Brookings Institution. But never mind that: that is only a quantitative problem, and the really desperate problem is the qualitative one.

Just try this some day for an intellectual exercise, or rather a psychiatric exercise. Just how would you devise a questionnaire to ask people whether they can teach their native language? How would you word the questionnaire so that at least ten percent of the answers could be believed? Or at least so that they could be interpreted into something useful? Remember that the professionally qualified teachers are practically all busy at the game already; what is wanted is to find those that are not qualified but could become qualified with a reasonable amount of training, and above all who could be persuaded that they need training before they can begin to teach what they have been able to do since they were four years old!

Finally, where do you get your list of addressees for the questionnaire? If we had the right list of addressees we wouldn't need the questionnaire!
Altogether, then, this is not merely a difficult but an impossible task. That is why it is taking so long: the difficult tasks can be done immediately with enough effort, the impossible tasks take longer. After several years of preparation, the CAL began on this one in 1963, and if we are lucky the results may become substantial as early as 1968, five years later. In September of 1963, a pilot conference was organized and paid for with CAL money, gathering together university and public-school-system people and representatives of the National Council of Teachers of English, the National Association for Foreign Student Affairs, the Speech Association of America, the Modern Language Association of America, and the CAL itself: the head of the CAL English Program and staff assistants, as well as the Director of the CAL. This led to the first national conference on the teaching of English to speakers of other languages, sponsored by the same five organizations and attended by well over 700 people when it met in Tucson, Arizona, in May of 1964. The most recent result after intervening consultations and smaller meetings, has been the second national conference on the same subject, with a still larger attendance, held on March 12th and 13th, 1965, in San Diego. This latest conference resolved at last (it doesn’t do to rush) to form a National Association of persons interested in these things, whether teachers or not, with its own secretariat and its own journal. Ten thousand questionnaires are being distributed partly by the sponsoring organizations and partly by others, for the purpose of collecting personal members of the new association. Then it is hoped, the membership will grow swiftly and at the same time the journal will educate the membership to the point where they will sort themselves out into possible teachers and others, and the possible teachers can recruit other possible teachers, and so on. Maybe that isn’t the way it will go, and perhaps it will simply collapse; but at least we’re giving it the old college try. If any of you can think of a more promising way, please tell us!

I have spoken of two things the CAL does, information-handling and the creation of groups and institutions. In these as in all the others, the CAL maintains a neutral position on all questions of linguistic theory or doctrine. It is not a school because it does not hold classes; and again it is not a school in the other sense because it does not propagate any particular theory of what language is or what linguistics is. The CAL mission includes the fostering of linguistic science and the encouraging of

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1 Its Transactions have just been published: 174 pages of fine print under the title *On Teaching English to Speakers of Other Languages*, ed. Virginia French Allen, National Council of Teachers of English, Champaign, Illinois.
all the efforts of others towards the development of linguistic science and
the development of language teaching; but all this fostering and furthering
must in principle be completely neutral among the various beliefs and aims
of others in the field. It is inevitable that the professionals on the CAL
staff have each their own theories about language, and they are free to
work individually in favor of their own views; but they cannot commit the
CAL to one view against another. The CAL management, in picking and
choosing among things to do, must still discriminate between reasonable
and silly programs; and it is true that this discrimination involves a certain
intellectual arrogance; but that can’t be helped, and after all it is no worse
than a preference for reasonable against silly notions about immunology
in public-health work. Fortunately, the silly notions tend to cancel each
other out, and the reasonable ones, though they still disagree somewhat
with each other, typically can be harmonized in a cooperative effort.

Cooperation is the ideal, and the tasks are too urgent to leave room
for bickering. Where does the CAL fit into the cooperative effort? It fits
in most especially just where cooperation is difficult among other persons
and groups and institutions. Cultural lag, to return to our primary notion,
is most troublesome where the public needs and the public institutions are
not in balance. There are two main features of this imbalance between
needs and institutions. One is that each public institution has its own
charter which was originally designed to fit it for an earlier stage in history;
the other is that new needs emerge long before any public institution what-
ever is created to meet them. The charter of the CAL is just the reverse
of the charter of a normal public institution, so that the mission of the
CAL is to compensate for all the limitations of the public institutions, and
for the absence (we hope the temporary absence) of new ones.

Here is an analogy. No organization can operate efficiently and flexibly
without a petty-cash box; but no government agency that I ever heard of
is allowed to have a petty-cash box. And what is true of cash is true also
of ideas and plans and efforts. The mission of the CAL is to enable public
institutions, and persons of all sorts who are working for public purposes,
to accomplish their own missions in the language and linguistics fields,
in spite of the necessary and desirable institutional constraints. The CAL
mission is essentially ancillary; its job is to fill in the interstices between
the mandates of our governmental and educational bodies, so that they
can do their own jobs in spite of their job-descriptions.

If institutions were forever incapable of evolution, and if no new public
institutions could ever be created, it would follow that the task of the CAL
and the money it spends could both grow endlessly. Fortunately, the CAL
tasks in filling in those interstices can be only temporary: each CAL task, as soon as it has demonstrated its usefulness, can be absorbed into the adjacent institutional tasks, and the CAL can drop out of the picture again. This has already happened in only a few cases; but six years is a short time in institutional history, and we may expect the time to come eventually (my guess is at least eight years from now) when the CAL at last can be relinquishing tasks as fast as it takes on others. The petty-cash box will be in balance then, which it is not today.

I have given one sample, admittedly one of the largest possible samples, of what the CAL has been doing to fill in between what other persons and agencies do: the English As A Foreign Language program (this is not its official title). Now let me rapidly run through some other samples. They will add up to far less than half of what the CAL has done so far. I will be able to name only parts of the other things; for more details, see the Annual Report for the fiscal year 1963-1964, a booklet of 34 pages.

The Roster of Linguists is a punch-card file by which we can find the detailed questionnaires of over two thousand linguists with personal data and listing of their competences; the cards themselves contain enough of these data so that a questionnaire will seldom be studied fruitlessly. This must be continually brought up to date and expanded, and within a year or two will be the central file of a Manpower Program in Linguistics and Language Teaching; at present, it is already being used for such purposes in response to inquiries, but only painfully and with full consciousness of its present inadequacy.

The main CAL Library has a staff of three. It already has 6,000 books and 375 periodicals and is growing at about 20% a year. Its reading room usually has a population of half a dozen students and specialists and it is believed to be visited at least once a year by about a thousand persons; the main reason is that it is already a necessary adjunct to the university and government libraries of the Washington area. In addition, the personal linguistics library of William A. Stewart is being installed in a neighboring room, about two tons of books and papers, to increase the effective strength of the CAL library by more than 50%. It is probable that the archives of the Linguistic Survey of Asia, comparable in size and unique in the world, will be installed within a year, making the CAL the biggest repository of minor-language information in the western hemisphere and enabling the Languages Program of the CAL to measure up to its mission at last.

The Publications list of the CAL now has about 30 items, many of them selling briskly, notably the Linguistic Reading Lists for Teachers of Modern Languages, a book priced at $2.50, and the Reference List of
Materials for English as a Second Language of which Part I (Texts, Readers, Dictionaries, Tests) was recently published, soon to be followed by another volume. About ten new books a year is the publication schedule for the immediate future, and it is sure to expand still further.

The Documentation Research Program of the CAL began only a year or so ago, and the chances are that it will grow a great deal. The relation between linguistics and the new documentation industry is reciprocal: linguistic theory is needed for the routines of indexing, abstracting, and retrieving information from documents in any field whatever; and the documentation industry can help CAL and other language and linguistic agencies and persons in return.

These examples account for roughly half the core staff of the CAL, though not very much of the time of the top management because they are more or less routine tasks. It is the rest of the work of the CAL that is harder to describe and in most instances even more important, since it is work which helps others to get results which are disproportionately great in comparison to the CAL effort. Once more, only a selection is listed here.

In 1957, Professor Henry A. Gleason, Jr., of the Hartford Seminary Foundation, one of the more distinguished American linguists, began work on a Dictionary of Linguistic Terminology—a real one, not a makeshift like those others. Many of us have consulted with him; he reported on the early stages at a Round Table meeting here a couple of years later. Until 1964, all the work was done by himself, his wife or daughter, or certain students in India during his tour of duty there; the result was about 60,000 citations and a good deal of preliminary planning of the form of the dictionary. All along, it was evident that the work could never be completed on the planned scale without financial assistance; about $35,000 according to the early estimates. The CAL stood by, ready to go after the money when Gleason was ready for it; and Gleason kept saying that he was not ready for money yet, since an adequate group of paid workers was not yet in sight. Then in November of 1964 the picture changed so suddenly that Gleason himself was not ready for the change; he wrote a letter which was not an appeal for money but only an expression of dismay that of course money could not be procured in time to keep him from losing a key man who had suddenly become available just then. That was what we were ready for, as no public institution is likely to be ready, and we immediately did the first necessary thing.

We got Gleason to fly to Washington on two days' notice; and on the week-end before Thanksgiving, Saturday and Sunday, a plan was worked out for a Proposal to the National Science Foundation, asking for support
up to $50,000. The deadline for handing in such a proposal was February 1, 1965, and the money could hardly be available before the middle of April. Accordingly, the CAL gave Gleason $1000 that same week, to pay the key man to the end of the semester, and $100 for petty cash; that would keep him afloat while other interim support was lined up. Then the CAL made an appeal to the American Council of Learned Societies for a drawing account up to $9000 to carry on the work in the phasing-in stage to the end of April, at which time the dictionary crew would have reached half its ultimate size of about twenty persons and the NSF money would be available. Because of the cordial relations between the CAL and the ACLS Committee on Language Programs, the appeal was answered with a check before the end of January; and the CAL got over $150 of its $1100 of development money back from Hartford in February. We are of course still waiting to see what the NSF does. If the answer is negative, the CAL must act promptly again; there is no need to decide in advance what the action will be, because the CAL can act promptly enough anyhow. If the answer is affirmative, the CAL will have procured adequate support for a crucial linguistic enterprise at a cost only about 3% as great as the amount of outside support; usually it costs about 10% or 20%, so that this would be one of the more fortunate operations. Some of them collapse, of course; you will excuse me from telling about those.

I have told you somewhat in detail about this particular task because it is one that I am thoroughly familiar with, since I was in the middle of it all along. It is typical in three ways: it shows the speed with which the CAL can act, far beyond the speed of any public agency and in fact beyond the speed of most individual persons; it shows how CAL money can be multiplied by a factor of from five to fifty times in its impact; and it shows the necessity and the advantages of having a neutral agency which is both knowledgeable and vigorous.

A small number of other and mostly larger projects will be mentioned to close this topic. All I can hope to do is to suggest something of the range. For most of the years since the war, the National Association of Foreign Student Advisers, later renamed "for Foreign Student Affairs," had been worrying, right through each college year and more concentratedly in their national meetings, what could be done about the English competence of students from abroad, and especially about screening them for English competence in the home countries so that they would not embark on their trip to America with too little prospect of success. Customary testing for English competence was often inadequate or vulnerable to pressures.
Finally the CAL took a hand. With a separate grant of $250,000 from the Ford Foundation, an independent National Council on the Testing of English as a Foreign Language was set up in 1963. It was the CAL that procured the grant; but because the new Council was ready to take the responsibility, the CAL naturally took no control over the further proceedings. The staff which creates the tests is housed in sub-leased space in the CAL quarters in Washington, and the CAL does their bookkeeping; Educational Testing Services administers the tests; the results have been so promising that the National Council finds itself able to procure further funds without further CAL help; the CAL can forget about it.

In most instances, however, CAL involvement continues far beyond the initial procurement of extra funds for the special project; yet it is always terminated as soon as possible. Examples are the Inter-American Program in Linguistics and Language Teaching, which has cost about $100,000 so far and has reached the point of organizing in South America a Linguistic Institute comparable to ours; the Automatic Language Processing Advisory Committee; the Committee on Linguistic Information, whose work Dr. Ferguson reported on here a year ago.

Some of the projects for which the CAL has procured separate support are short-term package deals. One example is the Sociolinguistics Seminar at the Linguistic Institute of 1964; the CAL planned it and procured money from the National Science Foundation under the auspices of the Social Science Research Council. Another is the Work Conference on Literacy, held at Airlie House in May of 1964 for the AID, a week-long meeting of eighteen people; their 55-page report has just been submitted to the Department of State. There have been other activities comparable to these two.

The Peace Corps language-training program, typically a three-month summer session for Volunteers who will go to their posts in September, has usually been left in the hands of college language people. When the language is not at home on that campus, the results are sometimes unfortunate. One such case was handed over to the CAL by the Peace Corps this winter. The result of their urgent request is a contract under which the CAL staff will create a 12-week training course in the Wolof language of Senegal for the summer of 1965. The CAL staff expert in this area, William A. Stewart, is in Dakar now, doing further research on the language; in a few weeks he will be sending lessons back to the CAL office; and the Washington staff will confer with him by mail until the form of the lessons is adequate and then edit and print them for the Peace Corps. About seven staff members will be involved in all, including the
visiting director as the responsible editor. It is a crash program, and the CAL will probably never do another such course for the Peace Corps; the plan, in keeping with the general CAL policy, is to show what can be done, and show it just once, so that the result can be a prototype for other language-course procurement by the Peace Corps. There remains, as before, the possibility of unpaid consultation with the Peace Corps; but the CAL will not compete with the numerous other possible producers of training materials after this one contract is completed. The CAL consented to do it this time because of the emergency situation.

I see that I can't make the list long enough to be truly representative because of the amount of detail I must give for each item. Accordingly I will dismiss far more than I have mentioned, and close with a single Big Job for the future, which will break down into quite a few sizable grants and contracts: quite a few million dollars could profitably be spent on this in the next decade, but we are making a modest start by asking for about $250,000 for a sociological and linguistic study of the language of school-children in the District of Columbia. This will be our first professional contribution to the War on Poverty. We are promising that there will be no economic effect for at least ten years; but if the Big Job is successful, the war can be won within a quarter of a century. The aim is to reduce the school drop-out problem to manageable size by cutting off the principal supply of drop-outs, namely the children who get alienated from all schooling at the age of five to eight when their first teachers scorn their home dialect instead of building on it for a start towards literacy. Research comes first, then new methods and materials accompanied by teacher retraining, for which the new NDEA English program opens the door.

The CAL could not possibly do more than a tiny fraction of the job itself. Fortunately, it won't have to do more than a tiny fraction; if the past six years have taught us anything, it has been this: a good thing needs only a small push, and others will come flocking to put their shoulders to the wheel.

This, then, is the role of the CAL in linguistics and language teaching: to find the opportunities for doing little things that make big differences, then to find others to do them if possible, and if necessary do them ourselves, but in every case to bow out promptly and let others carry on. There is no end to the good you can do if you don't care who gets the credit for finishing the job.
PROGRAM OF THE SIXTEENTH
ANNUAL ROUND TABLE MEETING

REGISTRATION—Palms Lounge, Walsh Memorial Building, 8:30 a.m.,
Friday March 26.

FIRST SESSION—Hall of Nations, Walsh Memorial Building, Friday,
March 26, 9:15 a.m.

WELCOMING REMARKS:

Rev. Frank L. Fadner, S.J., Regent, Institute of Languages and
Linguistics
Robert Lado, Dean, Institute of Languages and Linguistics
Charles W. Kreidler, Chairman, Sixteenth Round Table Meeting

PANEL: Approaches to Linguistic Analysis

Chairman: Raleigh Morgan, Jr., Howard University

Emmon W. Bach, University of Texas
"On Some Recurrent Types of Transformation"

Hans Glinz, University of Bonn
"The Relation Between Inner and Outer Form"

Peter N. Ladefoged, University of California, Los Angeles
"The Nature of General Phonetic Theories"

Robert E. Longacre, Summer Institute of Linguistics
"The Transformational Parameter in Tagmemic Field Structures"

LUNCHEON MEETING—Boarders Dining Room, New South, Friday,
March 26, 1:00 p.m.

Speaker: Thomas A. Sebeok, Indiana University
"The Present State of Zoosemiotics" *

* Prof. Sebeok’s paper will be published in the International Encyclopedia of Social Sciences, Vol. I.
SECOND SESSION—Hall of Nations, Friday, March 26, 2:45 p.m.

**PANEL: Language and Society**

*Chairman:* Earl W. Stevick, Foreign Service Institute, U. S. Department of State

Joshua A. Fishman, Yeshiva University
"Varieties of Language Ethnicity and Language Consciousness"

John J. Gumperz, University of California, Berkeley
"Linguistic Repertoires, Grammars and Second Language Instruction"

William Labov, Columbia University
"On the Mechanism of Linguistic Change"

Norman B. Levin, Howard University
"Contrived Speech in Washington"

RECEPTION—Palms Lounge, Friday, March 26, 6:00 p.m.

THIRD SESSION—Auditorium, Reiss Science Building, Saturday, March 27, 9:30 a.m.

**PANEL: Teaching Language Skills**

*Chairman:* Jacob Ornstein, Graduate School, U. S. Department of Agriculture

Carl A. Lefevre, Chicago Teachers College North
"Linguistics and the Teaching of Reading"

William F. Mackey, Laval University
"Method Analysis"

William C. Stokoe, Jr., Gallaudet College
"Repairing Gaps in the Vocal-Auditory Symbol System"

Peter Strevens, University of Essex
"Recent British Developments in Language Teaching"

LUNCHEON MEETING—Billy Martin's Carriage House, 1238 Wisconsin Avenue, N.W., Saturday, March 27, 1:00 p.m.

*Speaker:* MARTIN JOOS, Center for Applied Linguistics, University of Wisconsin
"The Role of the Center for Applied Linguistics"
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