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I recently attended a lecture given on this campus by the well-known classicist, Hugh Nibley, in which he asserted that prepositions cannot be defined. "Trying to define prepositions," he said, "is like asking a centipede how he manages with all those legs." Of course, his observations seem somewhat casual as far as scientific linguistic inquiry is concerned. Nevertheless, his assertion does merit our attention; for just as a centipede intuitively correlates the orderly movement of his many legs, we human beings intuitively insert prepositions into our syntagmatic strings hundreds of times each day without consciously having the ability to define what they mean. Consider the sentence:

The boys walks to the school.

Any native speaker of English could readily define "boy," "school," the idea of "walking," and the idea of definiteness as it relates to "boy" and to "school." Nevertheless, how would he define TO? Although the first impulse may be to say that TO simply means "directionality," cases in which TO does not mean "directionality" are myriad. (For example, the TO in the sentence

John is easy to please

has nothing to do with directionality.) Our native English speaker might next assume that TO does not mean anything. He would be quick to agree, however, that the sentences

The boy walks to the school, and

The boy walks the school

mean vastly different things. How, then, do we account for the effect that TO—or, for that matter, any preposition—has upon a sentence?

I propose that it is possible not only to "manage" with all of those prepositional legs that English has, but it is possible also to define them. In the present study we will demonstrate:

1) that prepositions have meaning, and

2) that a given preposition can be specifically defined both in terms of its several particular meanings which result from variations on its contextual usage, and in terms of its general (invariant) meaning, which pervades the uses of that preposition in all its contexts.

The vehicle which we will use for this semantic investigation is the preposition TO. Finally, we will suggest that the investigative methods used to arrive at establishing the invariant meaning and the contextual meanings of TO can be analogically applied to define any preposition.
Meaning in Prepositions

To support our initial claim that prepositions do have meaning, consider the following minimal comparisons:

The boy walked to the hill.
The boy walked over the hill.
The boy walked around the hill.
The boy walked from the hill.
The boy walked through the hill.

Each of these sentences provides us with a different mental image with reference to the boy’s walking relative to the hill. The only thing that varies from sentence to sentence is the preposition chosen. Any preposition that we might have chosen would have provided us with a different interpretation of the sentence. The only rational conclusion we can reach, therefore, is that the element which changes the meaning from sentence to sentence in the above example is the preposition. If prepositions had no meaning, all of the above sentences would provide us with exactly the same mental image. We may further conclude from this exercise that not only do the members of the grammatical category which we label "preposition" have meaning, but also that each preposition has its own meaning which distinguishes it from all other prepositions. Hence, the sentences

The boy walked to the hill, and
The boy walked through the hill,

convey very different pieces of semantic information. Although contexts undoubtedly exist in which the meanings of more than one preposition overlap, this same phenomenon can be observed in so-called "content" words, like "apartment," "flat," "pad," "condominium," or "dwelling." This fact alone should alert us to the reality that words such as TO are not so different from "content" words, contrary to what we might have previously believed. Both have meaning. Neither are "fillers" that arbitrarily appear in language for inexplicable reasons; and certainly neither are empty sound combinations which, devoid of meaning themselves, are still empowered to mystically modify the meaning of sentences.

If each of us were asked to compile a list of English prepositions, we each could do so without difficulty, and would, by and large, produce identical lists. The lists might vary in terms of completeness, but they would vary little or not at all with regard to which words we labeled as prepositions. By producing such results, we would be acknowledging that prepositions all share a number of characteristics, namely the characteristics which label these words as members of the same grammatical category. It is only one step away to suggest that
if any one member of the class can be defined it follows that the possibility exists—and that it is likely the case—that all members of the class can be defined in similar terms.

Special Considerations for Defining TO

The Oxford English Dictionary outlines four categorical uses of TO:

--as a preposition,
--as an infinitive verb marker,
--as an adverbial, and
--as a conjunction.

We will omit the use of TO as a conjunction because this category is obsolete in terms of contemporary English usage. (To illustrate, the most recent attestation listed in the O. E. D. for the use of TO as a conjunction is A.D. 1626.2 In most recent dictionaries, this category is not listed at all.)

With reference to the forms that are a part of our living language, we will limit our discussion to the TO that is either actually or potentially reduced to TƏ in elliptic speech.3

Normally, the theory involved in our approach to definition would require that we consider the forms spelled TƏO and TƏO, since they have the same form as TO in spoken language. Nevertheless, they are omitted from this discussion because neither TƏO nor TƏO has the potential for reduction to TƏ under any circumstances.4

With this foundation, we can now proceed to define TO as a representative of the grammatical class, "preposition."

Contextual Meaning versus Invariant Meaning

To a great degree, the task of identifying the various contexts in which TO appears and of defining its meaning in each context has already been done for us. Dictionaries of the English language have historically organized their entries so as to present, to one or another degree of exhaustiveness, the definition of each word as it appears in its various contextual settings. For example, Samuel Johnson, in his dictionary of 1755, cites twenty-five contextual meanings for the word TO.5 Noah Webster, in his 1828 "American" dictionary, identifies twenty-eight contexts in which TO is used.6 More recent dictionaries have attempted to categorize these definitions under major contextual headings. The most complete example is, of course, the Oxford English Dictionary, which devotes eight full pages to citations of TO as it appears in sixty-seven major contextual environments as a preposition, and thirty-six major environments in which it appears as an infinitive marker.7 Under these major headings appear numerous variations on the theme.
TO may well be the best example in the English language of a form which, at the hands of linguists, lexicographers, and traditional grammarians, has undergone nearly total atomization in terms of definition. Even recently published dictionaries have succeeded at generalizing the specific meanings of TO only to a limited degree. Webster's Third New International Dictionary, for example, classifies the definitions of TO into eight major contextual categories which seem to bear no close relationship to each other. The unavoidable consequence of this atomization is, in the words of Roman Jakobson, that the relation between sign and meaning is lost and questions of meaning are wrongly eliminated from the theory of signs. Semantics, the very core of linguistics and of sign theory in general, is thus deprived of an object of inquiry, and we are left with such grotesque results as morphology which never refers to the meanings of forms.

Therefore, in order to understand what TO really means, we must set forth a general invariant meaning which will apply to TO in all contexts. Concerning the nature of this general meaning, Linda Waugh, of Cornell University, has observed the following:

[In order to] extract such an invariant, one must take a sufficiently abstract view of the meaning of the form in question—one cannot simply equate its meaning with any one usage nor with its interpretation in given contexts. The meaning of the preposition cannot contradict any one contextual usage, but neither can it be equated with any one contextual usage.

Based on these criteria, I propose the following as the invariant (general) definition of TO:

Given X, a morphological form which occurs before TO in a syntagmatic string, and given Y, a morphological form which occurs after TO in a syntagmatic string, X is shaped, fitted, adapted, or conformed to Y.

Notice that our definition does not require that X be the form immediately preceding TO, nor does it require that Y be the form immediately following TO. It simply requires that TO always signify the concrete or abstract adaptation of X to Y. We will now accept as "given" the various contextual definitions of TO that are provided in the dictionary, and we will apply the above invariant definition to several diverse contexts in which TO occurs. I emphasize "diverse" contexts, because due to the dynamic nature of language and its infinite possibilities, it would, in the ultimate sense, be ridiculous to assert that we could exhaustively apply TO to every context in which it could possibly occur. By selecting sufficiently diverse contexts as illustrative examples, however, we can demonstrate the validity of the aforementioned definition. Some of the examples we will use were taken from the 1971 edition of Webster's Third New International Dictionary and the 1966 edition of the Random House Dictionary.
TO as an Indicator of Spacial Relationship

Although it is difficult to classify types of contextual uses, there are a number of uses of TO which indicate various aspects of spacial relationship. In the following sentences, for example, directionality is signified:

He rode TO the city,
He ran TO the kitchen,
He sprinted TO the finish line.

Recalling our invariant definition, we see that in these sentences, the verbal action is shaped so as to result in the subject's arrival at the place mentioned. Note that in the shaping process which TO represents, the verbal action must be shaped differently in the sentence

He ran TO the kitchen,

than it is in the sentence

He ran TO the bathroom.

In other words, in the first example, the running is shaped so as to facilitate arrival in the kitchen and, in the second example, the running is shaped so as to facilitate arrival in the bathroom. Regardless of the destination, however, the important thing to understand is that directionality is given here by the contextual verbs of motion, and that TO is the word which indicates the shaping of the verbal action.

Let us now compare the sentences

Throw the ball TO Harry, and
Throw the ball at Harry.

In the latter case, the ball is simply thrown in the direction of Harry; in the former case, the action of throwing is specifically shaped so as to permit Harry to receive the ball.

TO also can be used to indicate directionality when movement is not an issue:

John spoke TO the monolingual German.
John spoke TO the monolingual Japanese.

Given that John's speech was intelligible to the German and to the Japanese respectively, let us here observe that John's speech had to be shaped one way to facilitate his communicating with the German (i.e., John had to speak German) and had to be shaped or adapted in a very different way to allow him to communicate with the Japanese (i.e., John had to speak Japanese)--but shaped it had to be. We recognize the
same kind of shaping in the sentences,

He talks TO the point, and

He leaned TO light verse and good humor.

In the following sentences, the context is one of direct contact or static position:

She stood with her hands TO her eyes.

He applied polish TO the shoe.

Notice how TO conforms the polish to fit the contour of the shoe. Compare:

He applied polish TO the shoe, and

He applied polish on the shoe.

The latter does not require that the polish be conformed to the shoe. This point becomes even more vivid in the phrases,

dancing cheek TO cheek, and

standing face TO face.

TO requires us to see a point-to-point conformance in the positioning of the cheeks and of the faces, even though the cheeks touch and the faces do not. We simply do not see this shaping process through the use of other prepositions. What would it mean if we were to say:

dancing cheek on cheek,

dancing cheek at cheek, or

dancing cheek with cheek?

"Relative position" is the context for the next phrases:

a beam perpendicular TO the floor,

furniture placed at an angle TO the wall,

a line parallel TO the curb.

In the last example, TO adapts the line so that a condition of "parallelness" exists between it and the curb. It is interesting to note that because of the lexical meaning of "line," and the lexical meaning of "parallel," we are able to bring the line and the state of parallel into a fitted relationship with the curb; but we would not say,

parallel on the line,
parallel across the line, or
parallel through the line.\textsuperscript{13}

On, across, and through do not provide us with the shaping qualities that "parallel" demands. A marvelous example of this shaping principle as it applies to the context of relative position comes from a book entitled \textit{Theory and Practice of Presswork}:

"Stop the press if a sheet is not placed correctly TO the guides."\textsuperscript{14}

TO as an Indicator of Temporal Relationships

TO likewise can be used to indicate temporal relationships:

\begin{itemize}
  \item a quarter TO six,
  \item five minutes TO six.
\end{itemize}

Why does "five minutes TO six" always mean 5:55 and never 6:05? When the clock strikes six o'clock, that point in time becomes an immovable historical reality. Past time cannot be shaped because its becoming part of the past solidifies it into unchangeable fact. Hence, no shaping process can take place. In the context of TO as an indicator of temporal relationships, substantives (nouns) and their evolutionary processes (verbs) can only be shaped in anticipation of a future point in time from the standpoint of the subject.\textsuperscript{15} Likewise, TO can be used to express the idea of "until" because TO forces the subject to be temporally shaped or adapted to fit into a given time segment that is bounded on its most recent extreme. That most recent extreme is always a future point in time anticipated by the context. For example:

\begin{itemize}
  \item He stayed on the sinking ship TO the last minute.
  \item The office is open from eight TO five.
  \item The ceremony dates TO the first century A.D.
  \item The train runs according TO schedule.
\end{itemize}

(Anyone who has operated according to a demanding schedule knows how much fitting and adaptation must literally be done in order to run according TO schedule.)

TO as an Indication of Purpose, Intention, Tendency, Result or End

Consider the sentences:

\begin{itemize}
  \item Bob lives TO eat, and
  \item Bob eats TO live.
\end{itemize}
In the first, Bob's living is shaped so that eating is the prime object for his living. In the second, Bob's eating habits are shaped and fitted so that he eats only enough to stay alive. Notice that same shaping process in the sentences,

He was trained TO a religious life,

Our curriculum is tailored TO your needs,

Enter TO learn, go forth TO serve.

Shaping is likewise seen in phrases where TO indicates some kind of result:

a flag torn TO shreds,
broken all TO pieces,
sharpened TO a point,
tulips going TO seed.

Particularly instructive is the following example of a regional usage wherein TO means "with":

The farmer planted the land TO wheat.

The farmer's actions were shaped so that his planting resulted in wheat. That is, he had to plant wheat seeds—not barley, not oats, and not alfalfa.

TO also indicates capacity, as in

He desired to have her TO wife;

a determined end or condition, as in

born TO riches, or

sentenced TO death;

or an object of right or claim, as in

a title TO the property, or

a pretender TO the throne.

In all these contexts, however, we see the adaptation or shaping of X, a form preceding TO, to Y, a form following TO.

Other Uses of the Preposition TO

There are, in the ultimate sense, as many contextual definitions for
TO—or for any word—as there are contexts. Because of overlappings in contextual meaning, it is really impossible to classify the uses of TO into contextual categories short of identifying the invariant. Rather, therefore, than continuing to group various uses under major contextual headings, let us simply continue by examining some other diverse contexts in which TO is used.

As an indicator of extent or degree, as in

beaten TO death, and
worn TO a frazzle,

we see TO as a shaper of the verbal action to fit a particular state.

As an indicator of relation to a given standard in

They compared him TO a god,
Jean wore a hat identical TO the one Mary had on, and
That happened when I was knee-high TO a grasshopper,

we are forced to see shaping as an element without which comparison could not be made.

In the sentences,

Add salt TO taste,
The truck was made TO specifications, and
This testimony is TO the best of my knowledge,

we see again that:

--salt will be added until the degree of salinity conforms to fit the desired taste,
--the making of the truck conforms to fit certain specifications, and
--the speaker's testimony will conform to his best knowledge.

"John fell off the horse and broke his leg. That also happened TO Bill."

Here, TO causes John's experience to be conformed to Bill's experience, Bill also having fallen from a horse and having broken his leg.

There are two monsoon seasons TO a year.
There are two pints TO a quart.
TO requires the quantitative fitting of the two monsoon seasons and the two pints so that they fit into the framework of a year and a quart, respectively.

Consider TO as an indication of possession:

\[ \text{a belt TO that dress} \]

The belt may or may not fit any other dress, but TO positively tells us that the belt fits this dress.

\[ \text{A green spread TO the bed} \]

TO can be used to indicate that the spread fits the bed dimensionally, and, depending on the taste of the owner, that the greenness of the spread fits the interior decor associated with the bed and the spread. If we say,

\[ \text{a green spread on the bed}, \]

we can only be sure that the spread and the bed are in contact, but not necessarily that the spread in any way fits the bed.

Consider now this highly metaphorical use of TO:

\[ \text{She played Juliet TO the Romeo of an unknown newcomer.} \]

"She" shaped her actions to become reminiscent of the actions of Juliet so that they would fit into the scheme of the "newcomer's" Romeonic overtures.

As a veteran of several typhoons in Japan, I have been intrigued by the sentence:

\[ \text{He lived in a flimsy wooden house that shook TO the wind.} \]

I know all too well how, in a typhoon, a wood frame house adapts and fits its shaking to the blowing of gale winds.

Notice in these examples how TO shapes adjectival meaning to fit a given context:

\[ \text{agreeable TO everyone,} \]
\[ \text{blind TO art,} \]
\[ \text{unknown TO us,} \]
\[ \text{necessary TO progress,} \]
\[ \text{adequate TO our needs,} \]

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observable TO our senses.

Notice, likewise, how TO shapes two nouns so that they are fitted into some kind of relationship:

our attitudes TO our friends,
disaster TO the army,
a stranger TO the country.

Consider, also, how in the following examples, TO shapes verbal action:

He admits TO disappointment (His admission is shaped to conform with a state of disappointment),

Democracy succumbed TO dictatorship (Democracy is adapted, shaped, so that it becomes a dictatorship).

TO as the Infinitive Marker

Finally, let us consider TO as the marker of the infinitive, or uninflected verb form:

He wants TO go.

His wanting is shaped so that it can be expressed in the verbal action of going.

The water appears TO evaporate.

The water's appearance is so shaped that it can best be described in terms of evaporation.

Joe claimed TO hate Sousa,
Joe wanted TO hate Sousa,
Joe began TO hate Sousa,
Joe presumed TO hate Sousa.

In each case, the verbal action, of which Joe was a party, is shaped so as to manifest some aspect of hate for Sousa.

Conclusion

In the eleventh chapter of Hebrews, the Apostle Paul set forth to defend his invariant definition of "faith." After citing multitudinous examples of divergent contexts (just as we have done) to all of which his definition of faith applied, he wrote, "What more can I say? for the time would fail me to [cite all applicable contexts]." At this juncture, this speaker likewise feels inclined to ask, for the same
reason as did Paul, "What more can I say?" Although we have not, in this short time, exhausted the reservoir of contextual possibility as it relates to TO, we have applied our invariant definition to an incredibly diverse range of contexts, including substandard regional usages; and, in every case, TO has indicated a shaping process, which would serve to validate our invariant definition. Perhaps the most valuable lesson we can learn from this investigation is not that TO has an invariant meaning, or even that all prepositions have meaning; but rather, that the potential exists for our finding an invariant meaning for all words. As G. D. Brinkerhoff, called by one historian America's greatest mathematician, once put it: "The central problem in science is to locate the invariant." 17 As we come to the realization that invariance is the very foundation upon which all definition rests, we will most assuredly come to better understand how we as linguistic centipedes manage with all those morphological legs.
FOOTNOTES

1Lecture by Dr. Hugh W. Nibley, Professor Emeritus, Brigham Young University, Provo, Utah, 20 January 1982.

2The Oxford English Dictionary, 1933 ed., s.v. "To".

3There are, of course, contexts in which TO is typically stressed in order to show contrast. Consider the sentence: "Bob went TO the store, not by the store." Even in this case, however, dialects exist in which TO is reduced. For example, some speakers in the "southern" dialect region can be heard to say, "Bob went Tə the store, not by the store."

Only two cases can be found in which TO is not reduced to Tə even in elliptic speech:
1) He came TO. (from a state of unconsciousness)
2) He pulled the door TO. (so that it was completely closed. This is a regional usage which can be readily heard in Kentucky, for example.)

This can be attributed to the fact that in English phonology, the word in sentence-final position is stressed. There are fuller forms for both of the above examples:
1) He came to a state of consciousness.
2) He pulled the door to its frame.

TO can be reduced to Tə in both of these cases.

4Consider the example: "He spoke TO TWO boys. I, TOO, spoke TO TWO boys." TO can be reduced to Tə in elliptic speech; but the context wherein one would say Tə to mean TWO or TOO is inconceivable. Therefore, TWO and TOO are really different forms from TO.

I wish to acknowledge Dr. John S. Robertson and Mr. Richard Bonforte of the Brigham Young University Linguistics Department for their helpful insights regarding this issue.


7The Oxford English Dictionary, 1933 ed., s.v. "To".

8Webster's Third New International Dictionary of the English Language, 1971 ed., s.v. "To".


Webster's Third New International Dictionary of the English Language, 1971 ed., s.v. "To".


There is, of course, one context in which these three examples could be heard in actual speech. If a linear object, such as a metal rod, were laid across parallel lines, such as would be formed by railroad tracks, then one could conceive of sentences in which the tracks could be said to be "parallel on, across, or through the line" formed by the rod. Notwithstanding this highly improbable case, the point made in the text is still a valid one as it relates to normal speech.


We might here observe that the shaping process occurs only in a forward, progressive direction in all temporal contexts. This even applies in contexts such as: "The practice dates back TO the 15th Century." The sense of retrogression that one feels upon reading this sentence comes from the lexical meaning of "back." TO still serves to shape the idea of the origin of the practice so that it fits the period of time designated as the 15th Century. TO causes our minds to be focused toward--or in the direction of--the 15th Century. Therefore, this type of progression can be labeled as "positive," even though it is proceeding against what we intuitively define as the forward movement of time.

It is important to remember that directionality is not necessarily a component of the invariant definition of TO. It is only discussed here because, in our three-dimensional existence, we cannot talk of special or temporal relationships without considering directionality. Hence, "directionality" itself is more closely associated, in the invariant sense, with the notions of space and time than it is with the meaning of TO.

The Holy Bible (King James Version), Hebrews, Chapter 11.

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THE ESTABLISHMENT OF A REFERENCE STRUCTURE
HIERARCHY IN ENGLISH

Its Significance for SLA and Literary Research

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In recent years second language teaching has moved from basing sequencing on a hierarchy of forms (structures or grammatical points) to basing sequencing on some organization of functions. The functions, such as apologizing or requesting information, are posited and then students are taught a variety of forms which can be used to express the function.

For a much longer time, literary critics and researchers have, in many ways, focused on exactly the same relationships of functions and forms. They have asked such questions as: How has this novelist been able to draw his reader so quickly into the action? How has this poet managed to get such a vivid picture into the reader's mind? How has this writer managed to make his reader share in these feelings? These researchers have examined how the forms of language have been manipulated to serve various aesthetic functions.

In linguistics, the focus has been on both form and function, but the major trend has been on form. However, with the introduction of the idea of language typology, there has been a shift producing the current more even balance between attendance to function and attendance to form. Talmy Givón (1980) gives a reason for this more even balance when he claims that "the study of syntactic typology is the study of whatever structures that are paired—intra-language as well as cross-language—with well-defined specific functions in human language and/or communication" (p. 1). Givón then adds that in syntax we are not really talking about one function alone—that we are really talking about functional domains. Since the domains are made up of several forms or features, the domains are usually clines or continua with the forms or features at one end of the cline handling one or some aspects of the function and the forms or features at the other end of the cline handling other aspects of the function. Also, Givón says that functions are not totally discrete, that they are both inter-related and inter-dependent. Furthermore, functional domains may cross. For example, passivization serves in the functional domain of de-transitivization but it also serves both in the functional domain of topic identification and in the functional domain of impersonalization. How important the passive is in each of these functional domains depends on the language. In English, for instance, passivization plays an important role in impersonalization.
But how can a function or a functional domain be defined and recognized? This is a question both language teachers and linguists have asked. Generally, functions discussed in language teaching and linguistics have been left without clear definitions or boundaries. The definitions are to be intuited or inferred. For example, an ESL teacher may teach the function of "apologies." In doing so he or she will not give guidelines for recognizing what is and what is not an apology. Both the teacher and the students are assumed to intuitively know what an apology is.

Linguists have worked at making the definitions of the functions more empirical by defining them structurally. This has been possible to some degree because languages tend to code the same functions in similar forms. For example, although passives in many languages do not have the exact form that they do in English, they have similar forms and they basically serve the same functions. So, linguists look at the passive structures in many languages and isolate what seems to be common in their function. However, this approach also has problems. To begin with, it once again moves the focus of attention back to an emphasis on form and away from function. Furthermore, languages which have an unusual structure for a function would not be picked up, would be ignored in the comparison of functions. Any typological variation in the functional domain would be lost just because of this approach.

Because neither the intuitive nor the structural approach to defining functional domains seems adequate, Givón suggests a method which incorporates some of the better aspects of both. The steps of his method have been paraphrased in Figure 1.

FIGURE 1

STEPS FOR DELIMITING A FUNCTION

1. Intuitively, broadly, and laxly define the functional domain.
2. Look for all the structures which code points in that domain (both intra-languages and cross-languages).
3. Categorize and organize these structures.
4. Seek to define correlations between aspects in the functional domain and structural properties of the coding constructions.
5. Continue to refine the correlations between points in the domain and the properties of the constructions.

(Adapted from Givón, 1980)

This paper is basically a report of work done at the level of Step 4 (and a little at Step 5) using Givón's method to seek to define the functional domain of topic continuity. It seeks to define the correlation between points on this domain continuum and the properties which...
are used within the domain continuum in English. The previous steps in Givón's method for this particular functional domain had already been taken by Givón and others.

For Step 1 in the method, these linguists intuitively said that there was a domain which deals with topic identity and/or focus and/or continuity. They pointed out that all languages have ways of signaling what the discourse is about, of showing what the most important element in the discourse is. In Step 2, investigation of several languages (including English) produced a variety of structures which seemed to be used at various levels to maintain the topic of discourse. Those structures marked with an asterisk in Figure 2 are the structures that Givón originally hypothesized as having this function. By way of organization, Givón said that those structures at the top of the list were used when it was easiest for the listener/reader to identify the topic of the discourse and the structures at the bottom of the list were used when the topic was hardest to identify. The structures on this list not marked with asterisks were added to the list as a refinement after some initial study suggested that the original structures were too broad. Step 4, then, of which the research reported here is a part, was to find some way of measuring whether these structures actually functioned as hypothesized and if they functioned at the points on the continuum which had been suggested, that is, if the order on the cline was right.

FIGURE 2

STRUCTURES USED IN THE FUNCTIONAL DOMAIN
OF TOPIC CONTINUITY

1. *Zero anaphora
   John picked up his hat and left.

2. *Clitics/verb agreement
   (This structure is not used in English.)

3. *Unstressed pronouns
   John picked up his hat and placed it on his head. Then, he smiled at Mary across the room and she waved at him as he strode out of the room.

4. *Stressed pronouns
   (These can be detected in writing in English by italics or by reading the text aloud.) John gave Mary a smile and gave him a wave of the hand.

5. *Left dislocation
   The cheese they made there, they sold most of it to the miners.

6. *Definite article + NP
   John put the hat on his head and strode out of the noisy room.

7. Demonstrative + NP
   John smiled at Mary as he strode out of the room. This action bothered her for weeks afterward.

2.3
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Demonstratives alone</td>
<td>John smiled at Mary as he strode out of the room. <em>That</em> seemed inconsistent with his previous action.</td>
<td></td>
</tr>
<tr>
<td>9. Names</td>
<td>John smiled at <em>Mary</em> as he strode out of the room. He had to catch a plane to <em>London</em> within the hour.</td>
<td></td>
</tr>
<tr>
<td>10. NP after possessive</td>
<td>For weeks Mary was bothered by <em>John's</em> smile and his inconsistent manner.</td>
<td></td>
</tr>
<tr>
<td>12. *Passivization</td>
<td>The cheese was <em>sold</em> mostly to the miners.</td>
<td></td>
</tr>
<tr>
<td>13. *Y-movement</td>
<td>The cheese <em>they</em> sold mainly to the miners.</td>
<td></td>
</tr>
<tr>
<td>14. Indefinite referential</td>
<td>John picked up a <em>hat</em> which wasn't his and strode from the room. Several secretaries giggled when they saw it.</td>
<td></td>
</tr>
<tr>
<td>15. Existentials or presentatives</td>
<td>There were several secretaries in the room when John left. or <em>By the hat rack stood John.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The <em>roseate spoonbill</em> is a rare bird.</td>
<td></td>
</tr>
<tr>
<td>17. *Cleft or focus constructions</td>
<td>It was <em>John's smile</em> that bothered Mary for weeks afterward.</td>
<td></td>
</tr>
</tbody>
</table>

Three main factors seemed to influence which structure was chosen to maintain the topic: (1) how far from a previous mention of the topic the structure was, (2) how far into the following discourse the topic would extend, and (3) how many other referents or topics there were in the immediate discourse of the structure with which the topic might be confused. It was decided to use these three factors as the measuring rods to see if the structures had been properly placed along this functional domain continuum.

The first measure used, then, was one showing how many clauses back from a token (an instance of the particular structure being studied) another mention of the same thing could be found. This measure was called "lookback." To prevent continual counts back to the beginning of the discourse, the number "20" was automatically assigned to any token without a previous mention in the 20 clauses preceding it. In other words, "20" was the maximum lookback count.

The second measure showed how many continuous clauses into the discourse following a token references to it would persist. This measure was called "persistence." The final measure showed how many possible refer-
ents for a token existed within the preceding five clauses. This measure was called "ambiguity." A score of "1" was assigned to those tokens appearing in an environment in which there was only one logically possible referent for the token. A "2" was assigned if there were two or more logically possible referents in the near context. A "3" was assigned as the maximum value if there were no likely referents in the near discourse.

1513 clauses were analyzed for the structure, producing a total count of 4400 tokens. However, only 2175 of those tokens were analyzed because, after 200 tokens of any one structure had been analyzed, the other tokens of that structure were counted but not analyzed. There were five of the hypothesized structures for which there were not even 20 tokens in the 50 pages of discourse: clitics/verb agreement (which is a structure not used at all in English), stressed pronouns, left dislocation, Y-movement, and cleft or focus constructions. Because the counts of these tokens were so low, any figures based on them would be suspect so they are not included in the results of the counts. For persons involved in teaching ESL, however, these structures may be said to be "conspicuous by their absence." Many other languages use these structures much more than English and speakers of those languages may produce them in English much more than would be normal or desirable.

Figure 3 shows the number of occurrences of all the structures which had more than 20 occurrences in this narrative. There are several things which this frequency count suggests for the ESL teacher. One of them is the structures which must need teaching if students are going to be able to produce coherent writing in English. Another will only become clear in comparison with the frequency of these same structures in the topic continuity domain of other languages. For example, the great amount of the area of the domain that we cover in English with the definite articles + NPs and the indefinite referentials may be covered by completely different structures in, say, the topic-comment languages. As I understand it, left dislocation (which isn't even frequent enough to appear on this cline) may be one of the major topic maintainers in some of these other languages. This cline demonstrates the need we have for good functional domain analyses to help us understand many of the errors our students make.

Figure 4 shows the scores of the various structures for the three measures. There is no time at present to discuss the significance of all of these scores for each of the structures (even if the significance of all of them were known) but a few interesting observations may point out some things which can be gleaned from these measures and/or from the work to obtain these measures.

For instance, zero anaphora is definitely used for the most easily identified topics or referents. It is at the top of every cline. This position is not surprising in English as zero anaphora is generally thought of as being the result of Equi-NP deletion which requires identity of NPs. What is interesting is the way this structure can be used artistically. For example, in the text examined, at one point, there is a narrative within a narrative; one of the characters is telling a story. He says,
And Strangways's friends at his club say he was perfectly normal. Left in the middle of a rubber of bridge—always did when it was getting close to his deadline. Said he'd be back in twenty minutes. Ordered drinks all round—again just as he always did—and left the club dead on six-fifteen, exactly to schedule. (Fleming, 1958, 26)

This use of zero anaphora which is different from any other section of the narrative serves as a literary device that not only gives the feeling of talking but also signals that each line is part of what someone other than the author said and that more of the same is coming. We wouldn't need quotation marks to know when this speech is finished; the choice of topic continuity structure lets us know.

FIGURE 3

FREQUENCY OF USE OF VARIOUS TOPIC CONTINUITY STRUCTURES IN WRITTEN ENGLISH NARRATIVE

<table>
<thead>
<tr>
<th>Structure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unstressed pronouns</td>
<td>1163</td>
</tr>
<tr>
<td>Definite articles + NP</td>
<td>1023</td>
</tr>
<tr>
<td>Indefinite referentials</td>
<td>514</td>
</tr>
<tr>
<td>Names</td>
<td>483</td>
</tr>
<tr>
<td>NPs after possessives</td>
<td>370</td>
</tr>
<tr>
<td>Generics</td>
<td>337</td>
</tr>
<tr>
<td>Ø Anaphora</td>
<td>314</td>
</tr>
<tr>
<td>Existentials/Presentatives</td>
<td>102</td>
</tr>
<tr>
<td>Demonstratives + NPs</td>
<td>44</td>
</tr>
<tr>
<td>Passives</td>
<td>37</td>
</tr>
<tr>
<td>Demonstrative pronouns</td>
<td>27</td>
</tr>
<tr>
<td>Right dislocation</td>
<td>21</td>
</tr>
</tbody>
</table>

Numbers given are the number of occurrences in 50 pages of running narrative taken from Doctor No by Ian Fleming.

Demonstrative pronouns and demonstratives alone also appear to have some interesting characteristics in written narrative. These characteristics showed up not so much in the counts as in the attempt to do the counts. It was difficult to make the lookback count because the demonstratives generally do not refer back to a previously mentioned person or item; they usually refer to entire pieces of actions or verbs. Moreover, a difference between the use of THIS/THOSE and THAT/THOSE which has implications for all writers became apparent. THIS/THOSE often refers forward into the discourse rather than backward. For example, in the text studied, we read:

2.6
<table>
<thead>
<tr>
<th>Average Lookback</th>
<th>Average Persistence</th>
<th>Average Ambiguity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero anaphora</td>
<td>1.00</td>
<td>Zero anaphora</td>
</tr>
<tr>
<td>Unstressed pronouns</td>
<td>1.72</td>
<td>Unstressed pronouns</td>
</tr>
<tr>
<td>Demonstratives alone</td>
<td>2.27</td>
<td>Passives</td>
</tr>
<tr>
<td>Passives</td>
<td>9.37</td>
<td>Names</td>
</tr>
<tr>
<td>Demonstratives + NP</td>
<td>9.84</td>
<td>Demonstratives + NP</td>
</tr>
<tr>
<td>Names</td>
<td>9.99</td>
<td>Right dislocation</td>
</tr>
<tr>
<td>Right dislocation</td>
<td>11.19</td>
<td>Demonstratives alone</td>
</tr>
<tr>
<td>Def Art + NP</td>
<td>16.66</td>
<td>Existential/Pres</td>
</tr>
<tr>
<td>Existential/Pres</td>
<td>18.16</td>
<td>Def Art + NP</td>
</tr>
<tr>
<td>NPs after poss</td>
<td>18.34</td>
<td>Generics</td>
</tr>
<tr>
<td>Indefinite ref</td>
<td>19.17</td>
<td>Indefinite ref</td>
</tr>
<tr>
<td>Generics</td>
<td>19.23</td>
<td>NPs after poss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indefinite ref</td>
</tr>
</tbody>
</table>
"It's like this." He began his antics with the pipe. "The Jamaican is a kindly lazy man with the virtues and vices of a child. He lives on a very rich island but . . . ." (Italics added) (Fleming, 1958, 51)

Another evidence that the word THIS looks forward comes from a beginning to many anecdotes or jokes that we are all familiar with: There was this man and he . . . ." Notice that we never say, "There was that man . . . ."

Names fall in similar positions on all three measurement clines. However, names are one area which would have to be refined in Step 5 of the functional definition method because their use handles two distinct situations of topic continuity. Knowing both of these uses could be helpful to an ESL student (or to any writer). One of the uses occurs when there has been considerable distance (lookback) from the previous mention of a person or thing or if the person or thing has never been mentioned in the discourse before. Interestingly, names are often used for the first referent to a person or thing at the beginning of a paragraph to assign the topic for the paragraph even if the person or thing has been mentioned before. (This might be an argument for the paragraph being a natural discourse unit.) Names are also used in contexts where a lot of ambiguity exists. For example, when two referents are available for any pronoun which might be used, one of the referents is often referred to consistently by name while the other is referred to by a pronoun, as in

Somehow he had known that Bond had been given the job. He had wanted a picture of Bond and he had wanted to know where Bond was staying. He would be keeping an eye on Bond to see if Bond picked up any of the leads that led to Strangways's death. If Bond did so, Bond would also have to be eliminated.

(Fleming, 1958, 42)

Looking at Figure 4 again, notice how right dislocation falls somewhere in the middle of the clines for lookback and persistence but very near the bottom of the cline for ambiguity. This gives a clue to one of the main aspects of the continuity domain that right dislocation handles in English—ambiguity. The writer or speaker uses a pronoun and then seems to recognize that the context contains more than one possible antecedent for the pronoun, so he or she adds the extra information. Right dislocation is also used when the significance of the referent might have been forgotten by the reader/listener. For example,

Above him there was the noise of a plane. It came into sight, a Super Constellation, the same flight that Bond had been on the night before.

(Fleming, 1958, 55)

Now, notice that definite articles + NPs are just the opposite on the clines. They fall near the bottom of the lookback and persistence clines but near the top of the ambiguity cline. I think that all this is really saying is that definite articles are definite; they cannot
be used in a context with much ambiguity or else that they clear up the ambiguities. This area also needs further refinement in Step 5, however, because we still do not really understand how things are made definite.

Many other interesting facts about the English reference structures could be cited from the results of this study and the results of making this study. However, I think that there is sufficient evidence here to show that it is possible through the methodology suggested by Givón to begin to get a greater grasp on the functions of language.

And what exactly does all of this mean for persons working in literary research and/or second language acquisition research? I think the refinement of functions that structures normally perform will give literary researchers new insights into what a writer may have done artistically. For example, just as researchers can look at words such as "mud-luscious" and see what the artist has done lexically, or at the "silver song of the bird" and see what the author has done kinesthetically, they will be able to look at the beginning lines of a story, "He wished he had never met her," and recognize how, by manipulating the functions of the topic continuity structures, the author has drawn his reader immediately into the story searching for this "he" and "she" that is has been implied that he knows.

The refinement of functions that structures normally perform will also give second language researchers multiple insights. It will open the door to contrastive analyses of functions. Better still, it will help provide explanation for errors which have long mystified teachers and which have not been adequately explained because normal linguistic analysis has not treated functions as well as forms.

And, finally, the field of linguistics will be pushed ahead as the process of delimiting a functional domain demands a careful pairing of function and form rather than an abandonment of either one.

The morpheme se is one of the most frequently used pronouns in the Spanish language. That it is so frequently used is due to the many functions it can perform both semantically and syntactically. Spanish language students of all levels often find themselves frustrated and confused by the many uses that se has. One of the most confusing areas is in the conflict between the passive se and the impersonal se constructions. Beginning and advanced students find it hard to distinguish between the two structures and wonder: a) if there really is a distinction, and b) if the distinction really matters. Grammarians and linguists—both native Spanish and second language speakers—also encounter this difficulty.

Because the constructions are so commonly used, they are presented in textbooks of all levels. There are numerous articles and even entire books that discuss the question. As I have researched the subject, I have found that each theory proposed to solve the question has been rejected at least in part by other authors. The question has still not been resolved and probably will not be fully resolved for some time, as speakers of Spanish do not agree even as to which forms are acceptable. Many say that se vende casas is not technically acceptable because there appears to be no agreement. Otero and Strozer (1973, p. 1052) say that se venden casas is "agrammatical" because se represents an understood singular agent or subject and excludes any other specified subject.

This paper will attempt to explain the most prevalent theories and state objections found to each. It will also advance a theory to which there have not yet been any major objections.

The two constructions, the reflexive or se passive, e.g., se vende casas, and the impersonal se, e.g., se vive bien aquí are distinguishable. Molina Redondo (1974, pp. 20-21) says that the difference between the two structures is in form rather than in meaning. He feels that any transitive verb with a direct object can be understood as either impersonal and active or as passive and still convey the same meaning. According to him, both se vende casas and se venden casas are acceptable and have the same meaning. Knowles (1975, p. 9) disagrees. To him the sentence, "No se difundió las noticias, pero las noticias se difundieron" is a logical sentence.

The Latin American students I talked with were in general at first confused by the sentence but after some thought decided that it makes sense; although they would probably not say it. They found it hard to express the difference in meaning. Several authors have outlined what they feel to be the differences between the two structures.

Miranda Podadera (1967, pp. 186-87) explains that when the impersonal se structure is used there is no expressed subject and the noun receiving the action is preceded by a preposition or deals with an atomic preposition in the accusative. Examples of the impersonal se would be: se ayuda a los heridos and se los ayuda. Gonzalez-Mena de Lo Coco (1976, pp. 888-90) adds that when the se + singular verb
+ a + plural /animate/ noun structure is used, there must also be a determiner in order to retain the impersonal meaning. For example, se vende a cabras has a different meaning than se vende a las cabras. The nature of the object and the verb makes the difference. If the object can perform the act, the se + singular verb + a + plural object form is used. If the object cannot perform the act itself, se + plural verb + plural object is used instead.

Figure 1

<table>
<thead>
<tr>
<th>Underlying Subject</th>
<th>Object</th>
<th>Surface Form</th>
<th>Implication</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>/+Animate/</td>
<td>/-Animate/</td>
<td>Verb agrees in no. with object</td>
<td>Emphasis on event, not performer</td>
<td>Se venden casas.</td>
</tr>
<tr>
<td>/-Animate/</td>
<td>/+Animate/</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Se venden cabras.</td>
</tr>
<tr>
<td>/+Animate/</td>
<td>/+Animate/</td>
<td>Event can't be performed by object</td>
<td>&quot;</td>
<td>Se ayuda a los heridos.</td>
</tr>
<tr>
<td>/-Animate/</td>
<td>/+Animate/</td>
<td>Verb has singular form be performed by object</td>
<td>&quot;</td>
<td>Se destruyeron las casas en el huracán.</td>
</tr>
<tr>
<td>/-Animate/</td>
<td>/-Animate/</td>
<td>Verb agrees in no. with object</td>
<td>Speaker doesn't responsibility for event.</td>
<td></td>
</tr>
</tbody>
</table>

(With /+Animate/ /-Animate/ verb may be singular in "Las casas se vende.")

Otero and Strozer (1973, p. 1053) simplify the use of the impersonal se. They say that only verbs with human subjects can use se as PRO, PRO being an unspecified, animate, causative agent. For example, in se secó las toallas, las toallas is the direct object and se indicates an impersonal, /+human/ subject.

Lapesa (1959, p. 257) gives three basic elements of the impersonal se construction: 1) impersonality, 2) active voice, 3) se as the subject. His explanation is not quite adequate, as will be seen later in this paper. Molina Redondo's (1974, p. 16) description of the impersonal se constructions is somewhat more complete. He says that an impersonal sentence: a) deals with an action where a human agent is needed, b) has no subject, expressed or understood, and d) implies an undetermined event. He avoids the problem of calling se the subject by outlining five structures that use the impersonal se.
Figure 2

1. **Transitive verb + inanimate direct object.**
   
   e.g., *Se compra pan.*

2. **Transitive verb + animate direct object.**
   
   a. *Se busca un representante.* (Indefinite - no *a*)
   
   b. *Se ayuda a los heridos.* (Definite - uses *a*)

3. **Transitive verb used absolutely.**
   
   e.g. *Se lee mucho en esta clase.*

4. **Transitive verb + subordinate sentence.**
   
   a. *Se espera que baje la inflación.*
   
   b. *Se ven arder unos árboles.* (árboles - subject)
   
   c. *Se ve comer a los animales.* (animales - object)

5. **Intransitive verb.**
   
   e.g., *Se trabaja poco en estos días.*

Roldán (1971, pp. 24, 28, 29) gives three types of impersonal sentences: 1) impersonal *se* used with transitive verbs, non-human objects and a human or at least active subject not found in the lexical reading. He gives as an example of this type "*Se compran botellas.*" 2) Impersonal *se* constructions with a human object, e.g. "*Se saluda a los generales,*" and 3) Intransitive impersonal sentences, e.g. "*Se come para vivir.*"

Each of the earlier-mentioned theories describes the use of the impersonal *se* construction. It can be seen that the different grammarians view the problem differently and are not always in agreement as to its solution. The problem is further compounded when the impersonal *se* is compared to the *se* passive.

The passive *se* is generally described by grammarians as a substitute for the true passive or *ser* + past. participle in which the verb agrees in number with what would be the object in an active sentence. According to this and most other descriptions, what Roldán calls the impersonal *se* that uses a transitive verb with an inanimate object, e.g. "*Se compran botellas,*" would be considered passive. Knowles (1975, p. 11) says that sentences in passive or pseudo-passive *se* construction have these characteristics in common: 1) there is concordance, e.g. *se venden libros,* 2) not all sentences can be paraphrased using *uno,* e.g., *uno baila toda la noche ≠ se baila toda la noche,* 3) when the noun phrase that follows the verb is plural, *por sí mismo* can be often added, and 4) the personal *a* is not used.

It seems that the simple explanations cannot describe the structures fully and the more complex explanations are too unwieldy to be easily applied. These problems are in part due to the fact that the question of the origin of the two structures has not been answered.

Some authors have felt that *se* is merely a marker of impersonal and passive sentences that is derived in various ways. Contreras (1973, pp. 84, 85) feels that both *Se alquilan los apartamentos* and *Se alquila los apartamentos* come from PRO *alquila los apartamentos* where PRO is an unspecified human agent. He traces the transformations as follows:
To get **se alquila los apartamentos**, Verb Agreement and PRO Deletion are applied in reverse order and **se** becomes "subjectivalized." Contreras doesn't explain where the **se** of **Se Insertion** comes from.

Roldán (1971, p. 28) uses subject substitution to arrive at **se compran botellas**.

He doesn't explain why he can substitute **botellas** for a [+human, +PRO] subject.

Knowles (1975, p. 12) gives two sources for the impersonal **se**:

For source A the rule is "insert **se** if the subject of the sentence is a noun phrase that is [+PRO, +Human, ++3d person, ++indefinite]." For B it has to be assumed that "there is a set of transitive verbs generally subcategorized for human subjects that become intransitive with inanimate subjects provided that the clitic **se** is added."
Suñer (1974, p. 155) does not feel that the impersonal se can be generated by transformations because there would have to be a "powerful filtering device" in the surface structure to prohibit the generation of unacceptable structures. She feels that pronouns and clitics could be introduced in phrase structure rules and that there would then be a semantic rather than strictly syntactic interpretation of the impersonal and passive structures. In this article she does not give specific phrase structure rules.

Bull (1965, p. 124) and other authors have said that the impersonal se is reflexive. Although inanimate objects cannot really act upon themselves, a non-systemic use of the reflexive is employed to remove the responsibility for the action from the real agent. Other authors have given reasons that seem to show that the impersonal se cannot be reflexive. According to Lozano (1970, p. 455) it cannot be reflexive because the object cannot be the true deep structure subject. Gonzalez-Mena de lo Coco (1976, p. 888) says that it cannot be reflexive because the phrase a sí mismo cannot be added without changing the meaning. Otero and Strozer (1973, p. 1052) say it cannot be reflexive because it cannot be used paradigmatically. The sentence Nos vivimos como nos podemos is not possible. Martin (1979, p. 125) states, "In syntactically reflexive sentences, semantic subject-object relations are determined by non-syntactic knowledge or (pre) suppositions." He feels that our experience imposes limiting factors on whether we view things as reflexive or not. He gives as examples Los niños van a operarse, which would not be considered reflexive, and El médico va a operarse, which could possibly be reflexive.

Some have called se a subject because other impersonal pronouns like uno and alguien can be substituted for the se in many sentences, i.e. Se baila toda la noche and Uno baila toda la noche have similar meanings.

Lantolf (1976, p. 194) and Carrasco (1978, pp. 221-23) both say that se is not the equivalent of uno. When uno is used the speaker implies that either he or the listener is involved. Uno is less impersonal than se. Jordán (1973, pp. 597-603) concludes that se is the subject and that it can have a plural aspect. Luján (1975, pp. 336-338) refutes Jordán's article by showing that se cannot be the subject of both Se venden casas and Se vende casas because there are many sentences which cannot be expressed both ways. The difference is that in the impersonal sentence the subject is indefinite and [-specific]. In the passive the subject is determined. One of the most convincing arguments against se as a subject is the negative transformation. Normal negative word order is subject + no + verb. *Se no vende casas is not possible.

If se is not a mere marker of impersonal and passive sentences, not a reflexive direct object, and not the subject of the sentence, what is it? If, as Molina Redondo (1974, p. 16) writes, "Se indica la existencia de un agente humano subyacente que, caso de ser expresado en la oración, asumiría la función de sujeto," could se not be the reflexive indirect object pronoun indicating for whom, on whose behalf or by whom the action was generated? Prado (1975, p. 335) claims that se is a reflexive pronoun. He says,
A pronoun has to be defined by the rule itself. In order to derive se we should formulate a rule which causes the derived structure to meet the structural description of the ordinary reflexive rule. When there are several noun phrases within a sentence, one of which is the subject, the one which reflects the subject takes the form of a reflexive pronoun.

Prado's article does not formulate a rule but it seems that such a rule is possible. The Spanish ablative as well as dative pronouns can be expressed by se. Thus a él, a ellos, a sí; para él, para ellos, para sí; por él, por ellos, por sí; entre ellos and entre sí can all be expressed by the pronoun se. In Spanish sentences there is a possibility of having four noun phrases. Phrase structure rules could be

\[ S = NP_1 + VP \]

\[ VP = V + (NP_2) + (NP_3) + (NP_4) \]

where NP_1 is the subject, NP_2 a direct object and NP_3 and NP_4 are indirect objects. A reflexive sentence is one in which NP_1 or the subject has the same referent as any other NP.

Given the sentence *Se habla español*, logical grammar has to assume an unspecified animate subject. This subject could be represented by PRO or by X yielding X habla español. By whom, on whose behalf or por quién is the action generated? The action is generated on one’s own behalf or por sí. Demonstrated graphically,

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**Figure 7**

Se habla español

X is deleted and the pronoun se is moved to go before the finite verb yielding Se habla español. The sentence Se mató a los leones can be interpreted the same way.
The sentence *Se firmaron las paces* looks as though it would have to mean *Las paces firmaron las paces*; but it could also mean X (with a plural aspect) *firmaron las paces entre sí*.

It seems apparent by the confusion that exists about the passive *se* and the impersonal *se* constructions that the two have if not identical then very similar deep structures. The theory just presented may serve as a deep structure for the two surface structures. At least it is a theory to which there have not yet been major objections and one on which there can and should be more research done. Perhaps when the origin of *se* in impersonal and passive structures is finally known and understood, we will be able to find a sound way of teaching the constructions to students.
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The concept of aspect in Spanish grammar is not a new one. It was first mentioned by Frederick Hanssen as early as 1913 in relationship to Ser and Estar (Hanssen). This same concept was in turn taken by Samuel Gili y Gaya (1961) and developed to a greater extent. William Bull (1965) did an excellent structural analysis on Ser and Estar. The elements of particular importance in this presentation were the descriptive adjectives, the past participles and the adverbs of place. In this study he pointed out the general semantic distinctions between the usage of the two verbs. Although his terminology was different, the concept was semantic aspect. Professor Marta Luján (1979) recently wrote an excellent presentation dealing with the subject in great detail.

In the early seventies I had become aware of Gili y Gaya's writings on Ser and Estar and had taught the concept to graduate students at the University of Wisconsin, though never to the depths that Professor Luján achieved.

At the same time, Gili y Gaya (1961) had pointed out the presence of aspect in the verb tenses. This is taught generally with emphasis on the preterite and the imperfect tenses in Spanish.

Just what is aspect? It is best defined as a perspective or point of view. Things can be viewed from two opposing perspectives. One perspective is narrow and specific. Most authors call this perfective. The other is broad and general. This is called imperfective. In the case of the preterite and imperfect tenses this can be viewed in a time frame. Where a beginning and or end are emphasized the aspect is perfective. Where a broad frame is desired and the beginning or end are not important the imperfective or general perspective is utilized. The preterite is used for perfective aspect and the imperfect is used for imperfective aspect.

In the sentences

"Hice todo lo que pude."

"Hice todo lo que podía."

"Tuve una carta."

"Tenía una carta."

we see the effect of the perfective and imperfective aspects. In the first sentence we get a meaning of "I did as much as I wanted to and quit". In the second sentence we get "I did as much as I was able to". In the third we understand that "I received a letter." In the fourth "I had a letter in my possession".
In the case of *Ser* and *Estar*, the perfective aspect is assigned to *Estar*. The imperfective aspect is assigned to *Ser*. Professor Luján points out that *Ser* has both "stative" and "non-stative" properties while *Estar* has only non-stative properties. Stative is taken here to mean "a physical or mental state". When these verbs take an adjective *Ser* can take either stative or non-stative adjectives. *Estar* on the other hand can only take non-stative adjectives. Examples of non-stative adjectives are *lleno*, *vacío*, *contento*, etc.

"Está lleno." but not "Es lleno."

"Está vacío." but not "Es vacío."

"Está contento." but not "Es contento."

This assignment is based on a time frame where a perfective time requires *Estar* and an imperfective time requires *Ser* (Luján, 1979). Concepts like *lleno*, *vacío* and *contento* are considered semantically non-stative or perfective.

She goes on to point out that aspect theory works for all of the categories described by Bull. The past participle can take either *Ser* or *Estar*.

"El banco fue cerrado." and "El banco estaba cerrado."

"La ventana fue rota." and "La ventana estaba rota."

In the first case we talk about the closing of the bank versus the fact that the bank was already closed. In the second case we're concerned with the breaking of the window versus the fact that it has already been broken.

Adjectives can occur with either verb as well.

"Ellas son bonitas." and "Ellas están bonitas."

"Ese es feo." and "Ese está feo."

In the first set of sentences we're saying that the girls are pretty versus the fact that they got all painted up today. In the second set we're saying that that thing is ugly versus the fact that it's ugly now.

Adverbs of place also can be shown to fit this explanation as well.

"La clase es en 109 TMCB." and "La clase está en 109 TMCB."

"La fiesta es en el parque." and "La fiesta está en el parque."

In the first case it's the event that is the concern versus the group that takes part in the class. In the second example the event is the party and the second sentence talks about the party members.

Semantic aspect is found in works on the Subjunctive and Indicative
moods. Bergen (1978) uses "Reservation" as his term. Bull (1965) used "experienced versus non-experienced". We have used imperfective and perfective. Imperfective has been used to typify the subjunctive (as well as "reservation" and "non-experienced"). Perfective has been used to typify the indicative.

"El general ha dicho que lo fusilan." and "El general ha dicho que lo fusilen."

"Me alegro que Pablo ha venido." and "Me alegro que Pablo haya venido."

In the first case we have a sharp difference in meaning. The difference is that on the one hand the general says that they are shooting someone and on the other he's commanding them to shoot someone. In the second case (spoken by a Spanish speaker) I'm saying that I'm glad that he has come versus I'm glad that he's come.

Espinosa and Wonder (1976) use the same concept to talk about relative clauses and adjective position. The terms that they use are "especificativa" and "no-especificativa" (or "explicativa"). When a specific meaning is required the clause is a regular restrictive clause or the adjective is placed behind the noun. When a non-specific meaning is desired the clause is placed in commas and the adjective is placed before the noun.

"Tiene bonitos hijos la señora López." and "Tiene hijos bonitos la señora López."

"Ahí ves las hermosas montañas de Utah." and "Ahí ves las montañas hermosas de Utah."

"Los hijos que están aquí son bonitos." and "Los hijos, que están aquí, son bonitos."

"Ahí ves las montañas de Utah que son hermosas." and "Ahí ves las montañas de Utah, que son hermosas."

In the first case we either congratulate or insult señora López. If we place the adjective before the noun or use a non-restrictive clause we say that all of her children are nice looking. If we place the adjective after the noun or use a restrictive clause we say that she must have other ugly ones at home. In the case of the mountains we're saying that Utah has beautiful mountains if we place the adjective before the noun or use a non-restrictive clause, but if we place the adjective after or use a restrictive clause we're saying that these are the pretty ones and that there are some others that are ugly.

The concept of aspect can be extended to many other areas of grammar. Whenever a binary choice has to be made this can be shown to be done on the basis of aspect. If the selection is made on the basis of semantics then semantic aspect is used. This is the case with Ser and Estar, the subjunctive and indicative, and can be extended to concepts such as Sino vs. pero, conocer vs. saber and Qué vs. cuál.
Semantic aspect can also be seen in the prepositions. The classical case is **Por** and **Para**. **Por** is assigned the imperfective aspect and **Para** is perfective in nature.

"Voy por México." and "Voy para México."

"Nos vemos por las seis." and "Nos vemos para las seis."

"Esto lo hago por ti." and "Esto lo hago para ti."

In the first case we're saying that we're going **through** México versus to México. In the second one it can be **before**, at or **after** six versus any time up to six. The third case is ambiguous on the part of **por**. It can mean I'll do it **in your stead**; I'll do it **through** you or I'll do it **because** of you. "With **para** it means that you'll be the recipient of what I do.

This same technique can be used with any set of two prepositions. One will always be more perfective than the other. In the case of **a/para/hacia/hasta** we see:

"Voy a la casa." and "Voy para la casa."

"Voy para la casa." and "Voy hacia la casa."

"Voy hacia la casa." and "Voy hasta la casa."

In the first set we see that **a** is more specific than **para**, meaning that I'll go in a more direct line. In the second set **hacia** is more specific than **para**, again meaning more directly. In the third set **hasta** is more specific than **hacia** since I'm going right up to the house.

Semantic aspect can also be used in the selection between articles, whether definite or indefinite. It can be carried even further to reflect the choice between deletion of an article and its realization. This was shown in a thesis by Meredith (1974).

"No tengo tiempo para tomar mujer."

"Tu hermano va por pan."

In the first case it could be **el tiempo** and either **una** or **la mujer**. The presence of the article makes the sentence more specific. In the second sentence it could be **el** or **un** in front of **pan** which would again give a more specific sentence.

The verb tenses are considered by most authors to be a case of morphological or grammatical aspect. It is true that the aspectual distinction is manifested in the morphemes. In fact, aspect is considered to reside in the present and past participles in the compound tenses in English. Imperfective aspect is found in "**be + -ing**" and perfective aspect is found in "**have + -ed**". These same forms exist in Spanish. The imperfective aspect is found in "**Estar + -ndo**" and
perfective aspect is found in "Haber + -ndo". Spanish is different, however, in that it has an additional perfective tense in the preterite.

In cases where there is a presence of grammatical aspect and semantic aspect, semantic aspect dominates. This means that in a sentence like "La puerta fue abierta," the imperfective nature of Ser dominates over the perfective nature of the preterite "fue" and the perfective nature of the past participle "abierta". This gives a resultant imperfective statement.

Here we see, then, a relative sampling of the use of aspect in Spanish grammar. There are other possibilities as well. The concept is currently in limited use among language teachers and appears to be growing in significance.

References


The Spanish verb hacer which has the basic meaning of 'to do' or 'to make,' is also used in several specialized constructions. It is used to express various aspects of the weather "Hace calor" as well as in the causative construction "Hice pintar la casa." Among the important constructions which employ hacer, are the so-called "expressions of time." The constructions which I will discuss are typified by the following examples.

Hace una hora que canta. 'He has been singing for an hour.'

Hace una hora que llegó. 'He arrived an hour ago.'

These constructions are often difficult for the native speaker of English to master. I think there are three reasons for this difficulty. First, the Spanish equivalents of these English constructions cannot be obtained by translating the English structure word-for-word. Second, the Spanish equivalents for the two different English constructions are in fact quite similar. And third, the presentations of these structures in grammar books are generally incomplete and disjointed. They simply fail to provide an adequate linguistic explanation or characterization of the structures involved.

In this paper, I shall briefly discuss the ways in which the temporal expressions with hacer have been treated. I shall offer a general characterization of these structures. I shall also consider the kinds of events that may be expressed in the dependent clause of such constructions as well as alternative syntaxes to the general characterization I shall propose.

In introducing the two structures previously exemplified, most language text books (MLA, 1973 for example) merely present examples such as those already given. The text books then often typify the constructions with the following formulae:

\[
\begin{align*}
\text{HACE} & \ + \ \text{period of time} \ + \ \text{que} \ + \ \text{PRESENT TENSE VERB FORM} \\
\text{HACE} & \ + \ \text{period of time} \ + \ \text{que} \ + \ \text{PRETERITE TENSE VERB FORM}
\end{align*}
\]

The texts indicate that if the verb form is in the present tense, the construction refers to how long something has been going on. If the verb is in the preterite, it refers to how long ago something happened. In some texts (Solé & Solé 1982), the contrast shown by the juxtaposition of the above formulae is lost since the two constructions are presented in different chapters.
Some texts show (as does Castells & Lionetti, 1978) that there is also a construction:

\[ \text{HACIA} + \text{period of time} + \text{que} + \text{IMPERFECT TENSE VERB FORM} \]

According to Castells & Lionetti, this construction is used "when the action is described as beginning, continuing, and then stopping in the past." This description is not accurate as can be shown by the following example:

\[ \text{Cuando lo vi por \text{última vez, hacía cinco meses que Juan trabajaba en la fábrica.} } \]

'When I saw him last, John had been working at the factory for five months.'

According to Castells & Lionetti, John would have had to have stopped working for the factory in the past. Such is not necessarily the case, however. To their credit, Castells & Lionetti do present the above three formulae at the same point in their text. Other authors (Iglesias & Meiden, 1975) even separate the construction containing the present tense verb form and the construction containing the imperfect tense verb form. This separation masks an important similarity that exists between these two constructions—that they both measure how long an event has been going on.

At the same point in their text at which Castells & Lionetti consider the three formulae already presented, they also introduce for each an alternative which differs basically only in word order. Thus in their presentation, "Hace una hora que llegó" has one formula and "Llegó hace una hora" has another. Since each of the three formulae already presented has an alternate form, Castells & Lionetti introduce the constructions by stating that there are "six basic hacer-formulas... used to report ongoing or past duration, or time since." As far as I am concerned, to present these structures separately or as six different constructions is ad hoc and fails to capture the linguistic realities of these constructions.

Ramsey (1954, revised by Spaulding) gives a more complete analysis of these constructions. He states that:

\[ \text{Hacer expresses the length of time between two points. The initial point is always past; the terminal point may be past, present or future. Hacer corresponds to the terminal point, and is past, present or future accordingly:} \]

He then cites examples, with hacer conjugated in the imperfect, present and future tenses. Ramsey continues by stating, "the verb following hacer corresponds to the initial point." He proceeds throughout the succeeding pages to give examples grouped by the tense of the second verb.

While Ramsey includes more varied examples of temporal expressions with hacer, he nevertheless fails to characterize the entire construction.
My proposal

I propose that all expressions of time containing hacer can be derived from the following formula:

\[ \text{HACER} + \text{period of time} + \text{que} + \text{CONJUGATED VERB FORM} \]

In actual speech, \textit{hacer} is always conjugated in the third-person singular since it is part of an impersonal construction. Nevertheless, the infinitive appears in the formula since the actual form of the verb will vary according to the tense in which it is conjugated. The tense of \textit{hacer} controls the temporal reference point with respect to which an elapsed amount of time is measured. \textit{Hacer}, therefore, may theoretically be conjugated in any tense, since the reference point may be moved around in time to conform to any temporal configuration.

The next important element of the formula I propose is that of the conjugated verb form. The grammatical aspect of the conjugated verb form is what is important here. It characterizes the nature of the relationship between the reference point and the beginning of the period of time. If the grammatical aspect is IMPERFECTIVE, then the period of elapsed time which is measured relative to the reference point covers a period of time during which an event was taking place. If the grammatical aspect is PERFECTIVE, then the period of elapsed time which is measured relative to the reference point covers a period of time since an event took place. The actual tense of the conjugated verb in the dependent clause (as with verbs in all dependent clauses) depends on the tense of the main clause. The grammatical aspect, however, is selected by the speaker in order that he might specify the relationship between the two endpoints of the elapsed period which he wishes to express as shown in the following drawings.

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Verb in IMPERFECTIVE tense -- indicates how long event is sustained

\[ \text{X} \]

Verb in PERFECTIVE tense -- indicates how long ago event occurred

---

If the formula is to be substantiated, then, as suggested, it will be possible to conjugate \textit{hacer} in any tense together with a verb form showing either IMPERFECTIVE or PERFECTIVE grammatical aspect. In order to test this hypothesis, I prepared a simple fill-in-the-blank questionnaire and presented it to several native speakers to obtain a corpus of data. I do not claim statistical validity for the randomness of the sample nor for its size. My purpose was merely to sample native-speaker intuitions.

Consider the following examples:

1. Hace una hora que estoy aquí.

2. Hace una hora que llegué.
Sentences #1 and #2 show the most common type of construction, i.e. with hacer in the present tense indicating that the reference point with respect to which we are measuring the one hour of elapsed time is now. The verb of the dependent clause of #1 shows IMPERFECTIVE aspect (present tense) and hence the sentence shows how long my being here has been going on. The verb of the dependent clause of #2 shows PERFECTIVE aspect (preterite tense), thus showing how much time has elapsed since my arrival.

3. Cuando lo vi, hacía una hora que estaba aquí.
4. Cuando lo vi, hacía una hora que había llegado.

Sentences #3 and #4 illustrate hacer in the imperfect tense. This shows that the reference point is in a past time frame and that it is relative to another event. The verb of the dependent clause of #3 shows IMPERFECTIVE aspect (imperfect tense) indicating that up to the point at which I saw the other person, my being here was in progress and indeed had been going on for one hour. The verb in the dependent clause of #4 shows PERFECTIVE aspect (preterite tense) to show that the arrival was completed in the past prior to another event completed in the past—namely my seeing him.

5. Ayer hizo un año que está aquí.
6. Ayer hizo un año que estaba aquí.
7. Ayer hizo un año que llegó.

Sentences #5, #6, and #7 show the use of hacer, in the preterite—a form not considered in any of the aforementioned treatments of the hacer-construction. The reference point is thus placed at an absolute point in the past—it is not relative to any other event. In both #5 and #6, the verb of the dependent clause shows IMPERFECTIVE aspect, thus indicating the measurement of a period of time during which an action was sustained. The present tense of #5 indicates that the action is still maintained to the present moment, but the measured period of time is through yesterday. The imperfect tense of #6 indicates nothing concerning the individual's presence at the present time, only that at the end of the period of time in question he was still here. The preterite tense of #7 indicates that the elapsed interval measured the time since the individual's arrival. I would have expected a pluperfect to emphasize the anteriority of the arrival with respect to the reference point, but such was not reported by any of the informants. Since the grammatical aspect of the verb form is nevertheless perfective, the results are not inconsistent with my hypothesis.

8. Mañana hará un año que está aquí.
9. Mañana hará un año que estará aquí.
10. Mañana hará un año que llegó.
With hacer conjugated in the future, the reference point with respect to
which the interval of time is measured falls in the future time frame.
In #8 and #9, with the verb tense showing imperfective aspect, the time
measured refers again to how long the event will have been going on.
The present tense of #8 vs. the future tense of #9 is explainable by the
fact that the present tense is often used to indicate future events when
the reference is obviously future as in #8. In #10, in which the verb
shows PERFECTIVE aspect, the time interval measured is the time elapsed
since the occurrence of the event with respect to the future reference
point. Since the event has already come to a conclusion in the past,
the preterite is used in #10. The foregoing explanations of #8, #9 and
#10 interpret the future conjugation of hacer as referring to future
time. The future tense is also used to express probability in the
present. Under this interpretation, #9 would be impossible, since the
reference to the termination of the period of time is NOT future, but
rather present.

11. Ayer me dijo que en una semana haría un año que estaba aquí.
12. Ayer me dijo que en una semana haría un año que estaría aquí.
13. Ayer me dijo que en una semana haría un año que había llegado.

In #11, #12 and #13 hacer is conjugated in the conditional tense which
is essentially a backshifted version of the future tense. The two
possibilities for IMPERFECTIVE tenses are the imperfect and the
conditional. The PERFECTIVE tense must be the pluperfect to indicate
the relevant anteriority of the completion of the event. Again, like
the future, the conditional may be used to express probability in the
past, an example of which would be #14.

14. Haría un año que estudiaba chino.

With this meaning of probability, the conditional tense does not co-
occur in the dependent clause.

There remain two more verb forms in which we have not yet seen hacer.
These belong to the subjunctive mood.

15. Dudo que haga un año que esté aquí.
16. Dudo que haga un año que haya llegado de California.
17. Dudaba que hiciera un año que estuviera aquí.
18. Dubaba que hiciera un año que hubiera estado aquí.

In #15-18, although some informants chose to express the verb of the
second dependent clause in the indicative mood rather than in the
subjunctive, the grammatical aspect of the tenses within those moods
corresponded in all cases. The IMPERFECTIVE tenses of #15 and #17
indicate the time interval during which the event would have occurred.
The PERFECTIVE tenses of #16 and #18 indicate the time interval which
would have elapsed since the completion of the former event.
One further observation at this point. The formula I propose also accounts for the ungrammaticality of #19 which is so often produced by beginning language students when attempting to state "I have been here for three hours.

19. *Hace tres horas que he estado aquí.

To express the IMPERFECTIVE notion the ongoingness of one's presence, one must use an IMPERFECTIVE tense, thus excluding the possibility of the present perfect.

Nature of events

Having established the validity of the basic formula, I would like to turn my attention to the nature of the events which can occur in the dependent clause of hacer-constructions. All of the previous numbered examples were carefully selected so that the events that occurred in dependent clauses that were expressed by verbs conjugated in IMPERFECTIVE tenses were events that were durative in nature—that is events which could conceivably be sustained indefinitely. The events that occurred in the PERFECTIVE tenses were events that were terminative in nature—that is events that must be carried out to the end in order for it to be said that they happened at all. Thus the event "estar aquí" is durative, while "llegar" is terminative. The question is whether DURATIVE events can occur in the PERFECTIVE construction and vice versa.

Consider the following data:

20. Hace tres horas que estoy aquí.
21. Hace tres horas que estuve aquí.
22. *Hace tres horas que llego.
23. Hace tres años que llego a las seis.
24. Hace tres horas que voy llegando.

Sentence #21 shows that a DURATIVE event can be used in the PERFECTIVE construction. The sense here is that the period of time being measured is the time since the termination of a DURATIVE or sustainable event. Sentence #22 shows unacceptability of a TERMINATIVE event in the imperfective construction unless as is shown in #23 and #24 the event is viewed as habitual or is changed to a construction with a DURATIVE verb such as 'ir' modified adverbially by a present participle.

It is interesting to note the influence that the negative can have on the nature of an event. "Ir al cine" is a TERMINATIVE event. One must actual arrive at the theater and view the movie in order to say that the event took place at all. "No ir al cine," on the other hand is a DURATIVE event—one which may be sustained.
Compare the following:

25. Hace tres semanas que fui al cine.
26. Hace tres semanas que no voy al cine.
27. *Hace tres semanas que voy al cine.
28. Hace tres semanas que voy al cine cada noche.

Thus, #26 is acceptable because the event is DURATIVE and the construction is IMPERFECTIVE. The TERMINATIVE event "ir al cine" is compatible with the PERFECTIVE construction as shown in #25, but is incompatible with the IMPERFECTIVE construction as shown in #27—unless, as in #28 the reference is to the durative nature of a habitual action.

Permutations

There remains only one more problem in connection with the hacer constructions with which I must deal. These are the possible permutations of the the basic construction as outlined in the formula.

Consider the following as pertaining to the IMPERFECTIVE construction:

29. Hace un año que vive en San Francisco.
31. ?Vive en San Francisco hace un año.
32. Vive en San Francisco desde hace un año.
33. Desde hace un año vive en San Francisco.
34. Hacia un año que vivía en San Francisco.
35. ?Vivía en San Francisco hacía un año.
36. Vivía en San Francisco desde hacía un año.

In the permutations of the IMPERFECTIVE constructions the preferred form includes the preposition desde. (Compare #31 and #35 to #32 and #36 respectively.)

But what of the following examples? Isn't #37 an exception to the rule requiring the insertion of desde in the permutation of IMPERFECTIVE constructions.
37. Estaba aquí hace un año.
38. Hace un año, estaba aquí.
39. Estaba aquí ayer.

I think not. Compare #30-32 with #37-39. The latter express an entirely different concept. The phrase "hace un año" merely fixes a point in the past with respect to now at which someone's being here was in progress. The phrase is permutable as is the adverb ayer.

In contrast with IMPERFECTIVE constructions, the permutation of the PERFECTIVE construction does not require the insertion of any new elements. Compare the following:

40. Hace un año que vino a San Francisco.
41. Vino a San Francisco hace un año.
42. Hace un año, vino a San Francisco.

Here sentence #42 is analogous to both #41 and #38.

Conclusion

As I began studying these constructions I was amazed at the paucity of detail I found in the literature concerning them. They can be fairly complex as attested by some of the examples in this paper. Hopefully, the observations I have made and the formula I have presented will shed new light on understanding of these constructions.

References


Lubomir Bartoš once wrote: "A los rasgos más salientes del habla cubana pertenece su rapidez extraordinaria, o sea el tempo, que siendo mayor, trae consigo ciertas modificaciones que experimentan los sonidos en los grupos fónicos (Bartoš, 1965, p.147)."

One of the modifications to which Bartoš refers is the muscular relaxing in the articulation of consonants. This relaxing is perceived even more when the speech tempo is greater, but it is also perceived when the tempo is slower. Describing this phenomenon of "weak consonantism", Haden and Matluck explain that "its consonants tend to be extremely weak in muscular tension and to disappear or aspirate or neutralize with great facility (Haden & Matluck, 1974, p.21)." This phenomenon often causes confusion or lack of understanding on the part of the non-Cuban listener.

The more representative phonemes in which this phenomenon occurs are: /b,d,g,k,h,c,y,f,s/ in Cuban Spanish. Upon describing these consonants we will see that due to their relaxing, various changes and possibilities of changes occur: 1) the relaxing of the phoneme, 2) relaxing plus transformation to another sound, the latter becoming an allophone of the original and 3) relaxing plus transformation plus loss.

The changes that occur in the phonemes /b,d,g/ are similar; the relaxing reaches such an extreme that the articulation, in some cases is almost vocalic and transforms the phoneme into a vowel or it disappears.

López Morales in his article, "Fricativas y cuasifricativas no aspiradas en el español de Cuba (Notas de fonética genética)", gives el término cuasifricativas para aquellas articulaciones en que el canal queda considerablemente abierto, los órganos que forman la zona articulatoria están más distanciados que en la norma hispánica general, y, por tanto, al no producirse estrechez en el canal, la fricación disminuye y, en ocasiones, la articulación se acerca al tipo vocalico. El sonido resultante es poco fricativo y muy débil de tensión (López Morales, 1971, p.114).

López Morales notes that the phoneme /b/ has two fricative variants, the voiced bilabial fricative [β] and the voiced bilabial quasifricative [β]. In his article he reproduces the figures that appear in Curso de fonética y fonología española by Quilis and Fernandez (1966) and compares them with his figures of the quasifricatives. Here I reproduce both.
As can be seen, the opening for the quasifricative is greater thus diminishing friction. This relaxing contributes to the sound approximating that of a vowel. López Morales concludes by saying: "En general, las dos variantes de /b/ ocurren en todos los contextos fónicos, menos tras un sonido nasal articulado; en posición absoluta y tras /l,r/ son muy poco frecuentes (López Morales, 1971, p.117)." After a nasal he always find [b], the stop.

The voiced bilabial stop [b] and the variants [b̃] or [b] the voiced bilabial fricative appear in complementary distribution in the Spanish speaking world as a general norm.

Cristina Isbășescu informs us that besides the norm, in Cuban Spanish the opposite phenomenon also occurs: the fricative b appears initially after a pause and within a group in contact with an interior nasal, e.g. [bamoh] for 'vamos', [a'baje] for 'un valle' (Isbășescu, 1965, p.580). She also notes that the relaxing of the fricative b intervocally sometimes becomes the semiconsonant or glide [w]. This occurs more frequently when the vowel /o,u/ precede the b. Isbășescu gives as examples: [la woka] for 'la boca', [Kuwa] for 'Cuba' (1965, p.580). She also reports the loss of the /b/ intervocally in some cases.

As has been mentioned, the variants [b] and [b̃] of the phoneme /b/ are found in complementary distribution in the general norm, due to its relaxing, "en Cuba dichas realizaciones pierden su valor de variantes combinatorias, convirtiéndose en variantes libres. Las encontramos indistintamente, en cualquier posición y en cualquier contorno fónico (Isbășescu, 1970, p.476)."

López Morales disagrees saying that after a nasal [b] is always found. However I agree with Isbășescu, that the variants of the phoneme /b/ are free variants and appear even after a nasal, because when I speak, as a native Cuban speaker, I constantly articulate [b] and [b̃] after a nasal. With López Morales' description of the quasifricative I am in agreement.

López Morales describes the phoneme /d/ with two fricative variants, the voiced linguointerdental fricative [d̃] and the voiced linguointerdental quasifricative [d]. Again this quasifricative is articulated with a
greater opening. We can see the contrast between the fricative [B] from Quilis and the quasifricative [b] from López Morales.

López Morales indicates that,

Las variantes fricativas de /d/ ocurren en todos contextos fónicos, menos en posición inicial absoluta, tras /n,l/ y con frecuencia tras /r/, cuando su articulación es vibrante.... Entre las variantes fricativas la distribución se da en posición intervocálica ... y en posición postnuclear (López Morales, 1971, p.119).

The relaxing of the variants of /d/ reaches such an extreme that final /d/ disappears such as in verdá and paré (Haden & Matluck, 1974, p.22) it also disappears with great frequency in the past participles ending; in -ado, -ada, [kaminao, kasaa] instead of 'caminado' and 'casada' and least frequently in the past participles ending in -ido, -ida. The /d/ also disappears intervocally as in [sjudae] for 'ciudades' and [poemo] for 'podemos' (Isbăcescu, 1965, pp.581-82).

The same as /b/ and /d/, the phoneme /g/ also has two fricative variants; the voiced linguovelar fricative [G] and the voiced linguoalvelar quasifricative [j]. As we can see from the figures that I reproduce from López Morales (1972, p.118) the quasifricative is more open.
The fricative allophones of /g/ are free variants, except for after a nasal in which the stop [g] occurs. It should be noted that the quasifricative allophone [ʝ] "a veces llega a vocalizarse y a fundirse con la vocal que le sigue, si ésta es posterior alta o media, y con mucha frecuencia si es [w] (López Morales, 1971, p.127), for example [awa] for 'agua' and [watemala] for 'Guatemala.'

As with /g/, the phoneme /k/ when relaxed sonorizes and a transformation from voiceless velar stop [k] to [g] voiced velar stop occurs, as in [paraga] for 'para acá'. This relaxing does not always occur. [k] and [g] are free variants in initial position and after a nasal. [k], [g] and [x] are free variants intervocally. This phenomenon also occurs in my speech.

The voiceless velar fricative [x] as found in the Spanish world is replaced in Cuba by [h] the voiceless glottal fricative. According to Haden and Matluck, the "occurrences of velar [x] are extremely rare and obey no predictable pattern (1974, p.22)." The appearance of [h] voiceless glottal fricative is the norm, as in [lahente] for 'la gente', [huɔndao] for 'jugando' and [eλhwiʃjo] for 'el juicio'. Since speakers of Cuban Spanish tend to relax their pronunciation, we also find that besides [h] the voiceless glottal fricative there is another allophone, [ŋ] a relaxed voiceless glottal fricative, as in [inæŋjerfia] for 'ingenieria' and [elιhɔdɛl] for 'el hijo de él'. The subsequent result of even more relaxing is the disappearance of the sound as in [imainarte] for 'imaginarte' and [eɛmplɔ] for 'ejemplo' (Isbàñescu, 1965, p.583).

The same as with /b,d,g/ having quasifricative allophones that do not appear in the general norm, the voiceless palatal affricate[c] has as a variant [ʃ] the voiceless prepalatal fricative. This variant occurs intervocally as in [koʃe] for 'coche'. It also occurs in the initial position of a syllable if a consonant precedes (Costa Sánchez, 1976-77, p.14). In speech we find a vacillation between the two variants as: [mucaʃo] for 'muchacho' or [muco,muʃo] for 'mucho,mucho' (Isbàñescu, 1965, p.586). These variants occur in free distribution. "Most of the speakers never use it; other do sporadically, and still others do so all the time (Haden & Matluck, 1974, p.22)."

In Spain, the phoneme /y/ has as variants the [ʎ] voiced palatal affricate and [ʎ] voiced palatal fricative. The affricate occurs in phrase initial position and after /n,l/, and the fricative appears elsewhere. Isbàñescu (1965, p.586) maintains that the same occurs in Cuban Spanish plus that the affricate also appears intervocally. I disagree. Haden and Matluck report that

The voiced palatal fricative [y] is regularly maintained with relatively strong muscular tension in intervocalic position and never becomes affricate in this environment (voy a ir, hasta alla, etc.). Affricate [ʎ] occurs in phrase-initial position and after /n,l/ regularly with some speakers and not at all with others ([ʝ]o no se, con [ʝ]ave, etc.). 'Assibilated' [ʃ,ʃ] etc. never occur (Haden & Matluck, 1974, p.22).
I agree with Haden and Matluck. In my research¹ this has been the case, but I have also found that the voiced palatal glide [j] is another variant occurring only intervocally as in [mejamo] for 'me llamo', [lakaje] for 'la calle' and [porēmbujo] for 'por embullo'. It appears generally in faster speech. Thus we see again the weakening process from [y] to [j] to [j].

The phoneme /f/ is quite controversial. According to Isbășescu, the voiceless labiodental fricative [f] is articulated in Cuba in the same manner as in Spain and reports it sometimes disappears on word initial position such as [la orma] for 'la forma' (1965, p.583). She also relates that P. Henríquez Ureña found the transformation of [f] into [h] a relaxed voiceless glottal fricative. Haden and Matluck report the phoneme /f/ "always occurs as a voiceless labiodental fricative and found no case of voiceless bilabial fricative [p] (Haden & Matluck, 1974, p.22)." I disagree with both of these reports. In researching this, I came to the same conclusion as López Morales. The phoneme /f/ has three allophones: [f] voiceless bilabial fricative, [φ] the voiceless quasilabiodental fricative, where the point of articulation is the edge of the superior incisors and the interior wall of the lower lip, and [p] the voiceless bilabial quasifricative with different degrees of friction (López Morales, 1971, p.122). The following are reproductions from López Morales (p.125) of these variants.

¹I interviewed in Provo, Utah, five informants, I being included, three males and two females ranging in ages between 18 and 30. The males had been less than two years out of Cuba, the females 12 and 20.
López Morales concludes that these three variants occur in free distribution. I disagree only in that the voiceless bilabial quasifricative [p] does not occur before /l,r/.

The /s/ found in Cuban Spanish is the predorsodentoalveolar [s]. One can say that the /s/ is the phoneme with more variants and represents very well the changes that occur and can occur when a complete relaxing takes place. The possibilities of transformations are: [s] → [?] → [h] → [*] → 0. Cristina Isbañescu found various articulations in syllable final position:

a) Se oye a veces una s muy débil y relajada, pero a pesar de esto perceptible: [eˈstudjante] por "estudiante", [iˈsla] por "isla". La misma s débil se oye varias veces en posición final absoluta: [matansaˈ] por "Matanzas", [móntaˈnɔ] por "montañas".

b) Otras veces se oye una aspiración ligera: [uˈhte] por "Usted", ... [maˈfásil] por "más fácil" .... Esta aspiración ligera se oye también en posición final absoluta: [aˈbeh] por "aves" ...

c) A veces la aspiración que se oye es más fuerte, constituyendo una h laringal propiamente dicha: [bahtanˈte] por "bastante", [mehkla] por "mezcla" (Isbañescu, 1965, p.585).

In his studies, Tracy D. Terrell concludes that the loss of /s/ occurs in final position and that aspiration occurs syllable final and word final (Terrell, 1976, p.74). He says:

Among the informants ... complete deletion in word internal position is very sporadic, and sibilant retention is almost uncommon. Aspiration is clearly the preferred allophone ... aspiration is obviously the norm for all environments (Terrell, 1979, p.601).

At phrase final position, Haden and Matluck find that /s/ and its variants occur in free distribution, and they generalize that the faster the tempo of speech, the greater the loss, 0, will be. They conclude saying:

"Apparently, the sibilant may appear at pause, accidental or incidental, at phrase-final position, and sometimes under emphasis (Haden & Matluck, 1974, p.22).

One of the characteristics of Cuban Spanish is the relaxing of consonants, as we have seen with the phonemes /b,d,g,k,h,c,y,f,s/. The possible transformations due to relaxing of the articulators are:

\[
\begin{array}{ccccccc}
  b & - & (b) & - & \alpha & - & w \\
  d & - & (d) & - & \alpha & - & 0 \\
  g & - & (g) & - & \alpha & - & 0 \\
  h & - & \gamma & - & 0 \\
  c & - & \rho & - & 0 \\
  y & - & \gamma & - & 0 \\
  f & - & \rho & - & 0 \\
  s & - & \gamma & - & h & - & 0 \\
\end{array}
\]

As we can see, the allophones of /b,d,g,k,h,c,y,f,s/ are many. The process is of more and more relaxing until disappearance occurs. The understanding of this process opens the door for the comprehension of Cuban Spanish.

6.6
BIBLIOGRAPHY


The "drag-chain/push-chain" effect\(^1\) has been shown to be a useful mechanism in describing and explaining the process of change in the phonetics of certain languages and language groups. The purpose of this paper is to show how changes of a similar character have taken place both in the lexicon and the morphology of the Kekchi language, hence strengthening the position of that effect as a mechanism of linguistic change.

Briefly and simply stated, the drag-chain/push-chain effect occurs when some element of a given language system—be it phonetic, lexical, or morphological—takes over the function of another related element within the same system. This causes something of a chain-reaction within the system, each element involved shifting to assume the position formerly occupied by the next element in the chain.

**DRAG-CHAIN/PUSH-CHAIN IN A LEXICAL SETTING**

The first change to be considered here involves the Kekchi names of body parts; specifically, the terms for mouth, teeth, and face. The change itself resulted when the semantic position occupied by the Kekchi word for mouth (*či?) was taken over by the term formerly used for teeth (*-e). With this introduction, let us now reconstruct the lexicon as it probably existed before this change, so far as can be determined from existing data.

**STAGE I**

\[
\begin{align*}
*či? & = \text{mouth} \\
*-e & = \text{teeth}
\end{align*}
\]

\[(*u:č = \text{face}\textsuperscript{2})\]

There is strong evidence supporting this reconstruction. First, although the element *či? in its original form has dropped out of the language completely, it has left vestigial traces in a number of compound verbs in modern Kekchi, all of which refer to "speaking" in a highly marked or negative setting, as shown in the following examples\textsuperscript{3}:

- k'ämči?-i:nk = come to agreement
- takči?-i:nk = ill advise
- q'abči?-i:nk = make excuses

A study of colonial-period documents shows even more compelling evidence, including actual compound body-part terms relating to the mouth, as shown here\textsuperscript{4}:

- k'ak'ale či? = chin (k'ak'ale = "to guard")
- risma či? = beard (risma = "hair")

\[7.1\]
There are also certain vestigial terms which seem to employ the word *-e in its original meaning as "teeth," such as the following:

\[ \begin{align*}
   \text{šul e} & = \text{toothache} \\
   \text{k'upuk či e} & = \text{bite off with teeth}
\end{align*} \]

These, however, are less significant since they lie within the semantic realm of the present meaning of the word "-e."

Perhaps the most important evidence supporting this original reconstruction is the fact that virtually all other Quichean languages still retain "či?" as "mouth" and "-e" as "teeth," Kekchi being the notable exception, having made the shift in question.

The notion of a term for "teeth" taking over the more general "mouth" position in the lexicon is by no means an isolated phenomenon in Kekchi. There are a number of historically documented changes in which the same sort of shift occurred: namely, the replacement of the name of a body part through generalization of a term which refers to a marked portion of that part, in much the same way that the term "teeth" became generalized to mean "mouth." Here are a few examples:

<table>
<thead>
<tr>
<th>Early 7</th>
<th>Modern</th>
</tr>
</thead>
<tbody>
<tr>
<td>-aq'</td>
<td>ru²ux -aq' = tongue</td>
</tr>
<tr>
<td>ru³ux -aq'</td>
<td>tip of tongue</td>
</tr>
<tr>
<td>aq</td>
<td>sbe:n aq = knee</td>
</tr>
<tr>
<td>(*sbe:n aq = top of knee?)</td>
<td></td>
</tr>
<tr>
<td>-u:č</td>
<td>snaq' -u = face</td>
</tr>
<tr>
<td>žnaq' -u:č</td>
<td>= eyes</td>
</tr>
</tbody>
</table>

Stage I of our reconstruction fits well into this pattern:

\[ \begin{align*}
   *či? & = \text{mouth} \\
   *-e & = \text{teeth} \\
   -e & = \text{mouth}
\end{align*} \]

As a result of this shift, "*či?" dropped out of the language entirely, being retained only in the compound vestigial forms already shown. The term "-e" took over as "mouth," but for a time at least there appears to have been no set form for "teeth," and in fact "-e" may have occupied both positions. When a distinction was made, it was done through modification of the word "-e." One early grammar lists teeth as "šbagel -e" (lit. "bones of mouth/teeth"), while other sources, especially in more recent times, use "ru:č -e" (lit. "face" or "surface" of teeth/mouth). It was the latter which eventually became the universally accepted term.

7.2
This innovation became solidified during the past century when the Kekchi word "-uč" (face/surface) changed to "-u" in common speech. Hence, the term "ruč -e" is no longer conceptually identified by the Kekchi speaker as "surface of the mouth," but instead as an independent unit signifying "teeth," and the chain has been completed. Following is a representation of the initial and final stages of this change.

### STAGE I

<table>
<thead>
<tr>
<th>face</th>
<th>teeth</th>
<th>mouth</th>
</tr>
</thead>
<tbody>
<tr>
<td>-uč</td>
<td>*-e</td>
<td>*či?</td>
</tr>
</tbody>
</table>

### STAGE II

<table>
<thead>
<tr>
<th>face</th>
<th>teeth</th>
<th>mouth</th>
</tr>
</thead>
<tbody>
<tr>
<td>-u</td>
<td>ruč -e</td>
<td>-e</td>
</tr>
</tbody>
</table>

(Vestigial forms: ci)

In this instance the chaining effect in a lexical context is clearly visible; the term at the lead end drops out of the language or moves to a highly marked position, the middle shifts in the direction of the original meaning of the first term, and a new term is created at the trailing end from within the structure of the language itself.

**DRAG-CHAIN/PUSH-CHAIN IN A MORPHOLOGICAL SETTING**

The second change to be considered here took place within the morphological framework of the language and involved forms derived from a series of monosyllabic verb roots in which Kekchi, and Mayan languages in general, are exceedingly productive. These roots generally take the form C₁VC₂ and are used to form the principle set of transitive verbs in the language, as well as a significant series of descriptive positional forms, hereafter referred to as "stative." Of the many semantic categories derived from these monosyllabic roots, we will concern ourselves with two: that of the stative adjective, and that of the numeral classifier.

The stative adjectives make up a category of adjectival forms which describe a state or position directly related to the meaning of the monosyllabic root word from which they are derived. In modern Kekchi this adjective is formed with a reduplicative construction, as shown here:

\[ C₁VC₂ - C₁-o(k)¹² \]

Examples: k'ox = sit k'oxxk'o = seated ṭ'ap = shut ṭ'apṭ'o = closed

The numeral classifiers are formed in modern Kekchi as shown here:

\[ C₁VC₂ - V-1 \]
Examples: t'or = spherical  t'orol = sphere
       b'as = folded     b'asal = folded object

These classifiers are used in conjunction with primitive Kekchi numerals\textsuperscript{13} in the following fashion:

\[
\begin{align*}
xun & \ t'orol \ \xi \ \min \ = \ one \ (\text{roundness} \ of) \ \text{orange} \\
\os & \ b'asal \ \xi \ \hu \ = \ three \ (\text{folded}) \ \text{papers}
\end{align*}
\]

Both internal and external evidence strongly suggest that this modern system has undergone a change of the drag-chain/push-chain variety. In order to illustrate this change, let us reconstruct the morphological system as it may originally have stood in Kekchi. This necessitates the formation of a third semantic category, the reduplicative stative form, to explain the origin of the reduplicative element at the trailing end of the chain.

\[\text{STAGE I}\]

\[
\begin{array}{ccc}
\text{Reduplicative} & \text{Stative} & \text{Numeral} \\
\text{Stative} & \text{Adjective} & \text{Classifier} \\
* C_1 V C_2 - C_1 - ok & * C_1 V C_2 - V - l & * C_1 V : C_2 \\
or & & \\
* C_1 V C_2 - V C_1 - ok & & \\
\end{array}
\]

Note that this reconstructed system introduces a third morphological element, a long-vowel form of the monosyllabic root, to occupy the category of numeral classifier. To illustrate further, let us employ this reconstruction with an actual Kekchi monosyllabic root, "b'ol" (rolled up, cylindrical). The above categories would have looked like this:

\[
\begin{array}{ccc}
\text{Reduplicative} & \text{Stative} & \text{Numeral} \\
\text{Stative} & \text{Adjective} & \text{Classifier} \\
*b'olb'ok & *b'olol & *b'o:l \\
or & & \\
*b'olob'ok & & \\
\end{array}
\]

The change, then, simply involved the stative adjective *b'olol taking over the position of the numeral classifier *b'o:l, and the reduplicative stative *b'olb'ok (or b'olob'ok) assuming the position of stative adjective formerly occupied by *b'olol. With this explanation in mind, let us examine the validity of the reconstructed system in the light of available internal and external data.

\textbf{Numeral Classifier}—The reconstructed form of the original numeral classifier with the long vowel\textsuperscript{14} (*C_1 V : C_2, *b'o:l") is not difficult to verify, since numerous examples of this form still exist in modern Kekchi. Most of these denote units of measurement, as shown in the examples here:
Although these long-vowel classifiers are not uncommon in modern Kekchi, their domain is clearly limited, and they can no longer be spontaneously generated from the monosyllabic roots as can the replacement form which employs the suffix "-V-I". In some cases the classifiers exist in both the old and new form, indicating that the process of replacement is ongoing in modern Kekchi. Here are two examples:

\[
\begin{array}{ll}
\text{b'ol} & = \text{to fold, roll} \\
\text{xo'b'} & = \text{hollow}
\end{array}
\]

\[
\begin{array}{ll}
b'o:l, b'o:ol & = \text{roll of something} \\
xo:b', xo'b'ol & = \text{handfull}
\end{array}
\]

In addition to these internal evidences, there is also substantial external support for the long-vowel form as the original numeral classifier. Many of the lowland Mayan languages, for example, employ this form or its equivalent, as does Tzeltal\textsuperscript{15}.

Stative Adjective—With regard to the second element of the chain, there is overwhelming external evidence placing the "-V-I" suffix form in the category of stative adjective, as reconstructed here. Not only does this form appear in closely related languages such as Cakchiquel and Pokomchi, but in the distantly related lowland Mayan languages as well\textsuperscript{16}. There is also compelling internal evidence to that effect, since once again there are a substantial number of cases in modern Kekchi in which the form retains its original meaning, as in the examples shown here:

\[
\begin{array}{ll}
k'at & = \text{burn} \\
\text{c'em} & = \text{break off piece} \\
yok' & = \text{cut} \\
pex & = \text{tear}
\end{array}
\]

\[
\begin{array}{ll}
k'atal & = \text{burnt} \\
\text{c'emel} & = \text{piece broken off} \\
yok'ol & = \text{wounded} \\
pexel & = \text{torn}
\end{array}
\]

Note that in every case in which the "V-I" suffix form retains its position as an adjective, it describes some kind of defect or injury; this is evidently the only semantic domain in which the language has chosen to retain the original adjectival form in the "stative adjective" category.

Reduplicative Stative—It is somewhat more difficult to reconstruct and to document the original position of the third (reduplicative) form, for two reasons: First, its original meaning was almost certainly adjectival to begin with, so the change which occurred probably did not involve much of a shift in semantic domain; hence there are no internal relics of the old usage as is the case with the other elements in the chain. Second, this form actually appears to have undergone a morphological change in
addition to the semantic one, making it more difficult to apply external data. However, a fair reconstruction can be attempted despite these difficulties.

The morpheme in Cakchiquel and Pokomchi which seems to correspond with the Kekchi reduplicative form is actually formed from an inversion of the monosyllabic root; the vowel of the root is repeated, followed by the initial consonant and the suffix "-ik," as shown here (Kekchi equivalents are given in parentheses to the right):

\[
\begin{array}{lll}
\text{b'ol} & \text{b'olob'ik} & \text{(b'olb'ck)} \\
\text{sur} & \text{surusik} & \text{(sirsok)} \\
\text{yok} & \text{yokoyik} & \text{(yokyok)} \\
\text{pa?} & \text{pa?apik} & \text{(pa?pok)}
\end{array}
\]

In each of these languages the form shown has an adjectival function which contrasts with that of the stative adjective (the "-V-l" suffix form in each case), and it is likely that this was originally the case in Kekchi as well.

To a certain extent this construction can be reconciled with the Kekchi reduplicative form, since the loss of the repeated root vowel is consistent with similar changes in morphology which have occurred throughout the Kekchi lexicon. However, to this point we are still at a loss to explain the "-0" or "-ok" suffix on the Kekchi form, which is conspicuously absent in Cakchiquel and Pokomchi.

For a solution to this problem I refer once again to Cakchiquel, where the same reduplicative form is the basis for a series of verbal forms which are conjugated in both transitive and intransitive constructions. Interestingly, the morpheme which is used to set these verbal reduplicatives apart from their adjectival counterparts is the suffix "-0," which is added to the reduplicative form in a manner similar to the Kekchi form, as shown here:

\[
\begin{array}{lll}
\text{Root} & \text{Redup. Form} \\
\text{čap} & \text{čapačo} & \text{(Cakchiquel)} \\
\text{čap} & \text{čapčok} & \text{(Kekchi)}
\end{array}
\]

This Cakchiquel verbal construction offers quite a convenient explanation as to the origin of the Kekchi reduplicative form if we are willing to accept the assumption that the Kekchi form, which in modern speech is used exclusively as an adjective, originated as a verbal derivation rather than a strictly adjectival one. Fortunately, a search of Kekchi documents from the colonial period reveals that at that time the reduplicative form could, indeed be conjugated with an aspect marker, as an intransitive verb.
This suggests at least in part a solid basis for a former oppositional relationship between this form, which was evidently a verb, and the "-V-l" suffix form which in our reconstruction functioned as a stative adjective. The key, then, to the completion of the chain was probably the shift of the reduplicative from its verbal function to a strictly adjectival one, allowing it to take over the "stative adjective" category formerly occupied by the "-V-l" suffix form.

In summary, here is a reconstruction of the system as it appeared before the change, followed by the complete system as it appears in modern Kekchi (examples are included for illustrative purposes):

### STAGE I

<table>
<thead>
<tr>
<th>Reduplicative Verb</th>
<th>Stative Adjective</th>
<th>Numeral Classifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>*C_1V_C_2-C_1-ok</td>
<td>*C_1V_C_2-V-l</td>
<td>*C_1V:C_2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*C_1V_C_2-V_C_1-ok</td>
<td>(*b'olb'ok,</td>
<td>(*b'olol)</td>
</tr>
<tr>
<td></td>
<td>*b'olob'ok)</td>
<td></td>
</tr>
</tbody>
</table>

### STAGE II

<table>
<thead>
<tr>
<th>Reduplicative Verb</th>
<th>Stative Adjective</th>
<th>Numeral Classifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø</td>
<td>C_1V_C_2-C_1-o(k)</td>
<td>C_1V_C_2-V-l</td>
</tr>
<tr>
<td></td>
<td>(b'olb'o)</td>
<td>(b'olol)</td>
</tr>
</tbody>
</table>

Vestigial forms:

<table>
<thead>
<tr>
<th></th>
<th>C_1V_C_2-V-l</th>
<th>C_1V:C_2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(k'atal)</td>
<td>(b'o:1)</td>
<td></td>
</tr>
</tbody>
</table>

Here again the drag-chain/push-chain effect is clearly evident; in each case, as one element shifts to take over the category of another, the element formerly occupying that category either shifts accordingly or drops out of the language with the exception of a marked set of vestigial remnants which betray its original position within the system.
FOOTNOTES

1 The term "drag-chain/push-chain" was first used by André Martinet to describe phonological changes.

2 Kekchi documents up through the beginning of this century are replete with examples of the word "-uːʃ", and many modern compound forms retain it unaltered; it is cognate with "waʃ", which is used in other Quichean languages. The reconstruction of this term is only incidental at this point, since it was not directly involved in the chain.

3 These examples are taken from William Sedat, Nuevo diccionario de las lenguas Kekchi y Española (Instituto Linguístico de Verano en Guatemala, 1955).

4 These examples are taken from a manuscript alternately entitled Arte Kekchi de Chamelco, Arte en lengua Kekchi, and Arte de la lengua Cacchi; a typescript prepared by William Gates is in the Gates Collection in the Harold B. Lee Library, box 43, fol. 9. This manuscript is often referred to as the "Morales" grammar since at one point in about 1741 a poor fellow named Juan de Morales enjoyed the dubious honor of copying the entire work from an earlier manuscript. Gates' typescript is particularly intriguing since notations made by C. Hermann Berendt with a native informant in 1875 are included, giving us information on the language in two stages of development.

5 Taken from Sedat, op. cit.

6 See Lyle Campbell, Quichean Linguistic Prehistory (U.C. Press, Berkeley, CA, 1977), p. 55. Included is a lexical listing in major Quichean languages. It is interesting to note that Tzotzil has made a change similar to that which took place in Kekchi, though evidently in more recent times. This is evidently not due to mutual influence, since the two languages are geographically isolated from each other.

7 The first two examples of early forms are from the Gates manuscript (see note 4).

8 While this change has not become completely established, it is commonly heard in modern Kekchi.

9 Campbell (op. cit.) lists "-e" as both "teeth" and "mouth", and may have sources to back up that listing. My experience speaking the language, however, does not bear this out in modern Kekchi. Perhaps more significant is the fact that Tzotzil, which appears to have made the change more recently, still uses the term "-e" in both positions.

10 Gates manuscript, page 62. Note that Berendt had changed the "teeth" entry to "ruːʃ -e."

11 See Sedat, op. cit., p. 207.
Both modern and early evidence demonstrate that the final "-k" suffix was originally a part of this form, although in modern speech it is only pronounced when the term itself bears a suffix. This suffix, which corresponds to the "-ik" suffix of other Quichean languages, is fairly mobile and does not particularly affect the matter at hand, except to help establish that the form may have originated as a verb (as noted later in the paper), since in Kekchi the "-k" suffix is used to denote certain verb forms.

In Kekchi when the "primitive" (abbreviated) numbering system is used, the numeral classifier becomes mandatory, as in the examples shown. There is reason to believe that this was originally the standard method for utilization of numbers. Although this construction is not uncommon in modern Kekchi, it is more common now to hear the augmented number forms which are generally used without numeral classifiers.

The long vowel referred to here probably originated as a "vowel-\textbf{h}" construction: \textit{C}_{1}\textbf{V-h-}\textit{C}. This is the documented origin of a number of Kekchi long vowels (see Campbell, op. cit., pp. 47-61), and external evidence from lowland Mayan languages supports this.


See Hironymous, op. cit. Also Ricardo Terga et al., \textit{Gramatica Pokonchi} (Coban, A.V., Guatemala), pp. 4, 5.

See Larry L. Richman, "An Examination of Adjectival Forms in the Cakchiquel Language" (unpublished paper).

Vowels are frequently dropped from between consonants in the Kekchi lexicon. For example, \textit{i}\textit{oq} (woman) of other Quichean languages has become \textit{i}\textit{og}; \textit{oxob}' (cough) has become \textit{oxb}', etc. See Campbell, p. 41.

The Gates manuscript, after discussing the use of this form as an adjective, includes a couple of felicitous examples of its verbal usage as well (page 39). For example, \textit{k'}\textit{oxk'}\textit{okin} (I am sitting) appears also as \textit{nakin k'}\textit{oxk'}\textit{ok}.
Introduction. This paper deals with the problem of 'yes-no' words in Japanese. Specifically, it attempts to provide a uniform syntactic and semantic account of it in terms of categorial syntax and model-theoretic semantics of Montague Grammar.

After describing the use of Japanese 'yes-no' words, Jorden gives the following warning to her readers.

English usage [of 'yes-no' words] is as unexpected for a Japanese studying English as Japanese usage is for an American studying Japanese. Be wary of single-word answers given by a Japanese who is not fluent in English. In answer to 'Don't you have any bananas?' a 'yes' from many Japanese means 'Yes. We have no bananas.' (1962: p. 10)

Jorden attributes the cause of this kind of misunderstanding to the difference in the use of 'yes-no' words between the two languages. Consider Jorden's account presented below.

Hai [the Japanese yes word] usually means 'what you just said is right.' In answer to affirmative questions, it corresponds to English 'yes', but in answer to negative questions that anticipate a negative answer, it usually confirms the negative and corresponds to English 'no'. Lie (the Japanese no word), the opposite of hai, means 'what you have just said is wrong' and behaves in a parallel way: in answer to negative questions that anticipate a negative answer, it usually contradicts the negative and corresponds to English 'yes'. (1962: p. 10)

In responding to negative questions, equating the Japanese yes and the English no on the one hand and the Japanese no and the English yes on the other is not unique to Jorden's analysis. The fact of the matter is that it is a consistent position throughout conventional Japanese grammars.

The conventional explanation is a viable one to a certain extent. Consider the examples in (1) and (2).

(1)

   Nom walk-PAST-Q
   'Did John walk?'

   yes
   'Yes. John did.'
c. Iie, John-ga arukimasendesita.
  no    walk-not-PAST
   'No. John didn't.'

(2)

   walk-not-PAST-Q
   'Didn't John walk?'

   yes
   'No. John didn't.'

c. Iie, John-ga arukimasita.
   no
   'Yes. John did.'

(1a) is a positive question and 'yes-no' words are used just like in English in accord with the conventional explanations. (2a) is a negative question and hai 'yes' and iie 'no' correspond to English 'no' and 'yes' respectively. So, these examples support the conventional account.

Now consider the examples in (3).

(3)

   walk-PAST that is-not-Q
   'Isn't it the case that John walked?'

   yes
   'Yes. He did.'

c. Iie, John-ga arukimasendesita.
   no
   'No. He didn't.'

(3a) is a negative question as indicated by the English translation. So, the Japanese 'yes-no' words should behave just like they did in (2b and c). However, contrary to our expectation, the presence of the negative morpheme (masen) has no effect on the use of the 'yes-no' words and they behave as if they were in a positive question. Thus the examples in (3) refute the traditional explanation.

What examples (1) through (3) suggest is that questions and answers are interrelated with each other and can be regarded as constituting a closed system of their own. Accordingly, a linguistic analysis for one should go with that for the other. Pursuing this line of thought in what follows, I will first present an analysis of questions. Then on the basis of that analysis, I will show that it is possible to provide a uniform account for the syntax and semantics of the Japanese 'yes-no' words.

Questions. There is only one question particle (Q) in modern Japanese that can be used in both yes-no and wh- questions. Consider the examples
These examples show that a) there is no wh- movement in Japanese, b) the only morphological difference between yes-no and wh- questions is the presence or absence of a wh- phrase, and c) the question particle ka follows the past tense marker ta.

Now consider the examples in (5).

    'John drank what.'

b. Dare-ga nani-o nomimasitaka.
    who drink-PAST-Q
    'Who drank what?'

c. *Dare-ga nani-o nomimasitakaka.
    drink-PAST-Q-Q

d. *John-ga miruku-o nomimasitakaka.
   drink-PAST-Q-Q

(5a) shows that in a wh-question, the presence of both a question particle and a wh- phrase is obligatory. Examples (5b,c, and d) show that Japanese allows multiple wh-questions but only one question particle is permitted per simplex sentence.

On the basis of these observations, I propose the following desiderata.

(6) desiderata: A good analysis of simplex questions should account for the following five points:

a) The question particle ka can be used in both yes-no and wh- questions.

b) The question particle follows a tensed verb phrase.

c) A wh- question requires the presence of both the particle ka at the end and a wh-phrase somewhere in it.
d) Multiple wh- questions are allowed.

e) A simplex question correlates only one question particle.

Categorial analysis. Karttunen (1978) presents a categorial analysis of questions in English in which he postulates the syntactic category Q (question). The use of this category is motivated by a need to subcategorize verbs that may take question complements. The examples in (7) demonstrate this point.

(7)

a. I do not know who is coming.

b. *I do not believe who is coming.

Now consider the examples in (8).

(8)

a. Dare-ga kuruka sirimasen.
   come-PRES-Q know-not
   'I do not know who is coming.'

b. *Dare-ga kuruka sinzimasen.
   believe-not
   'I do not believe who is coming.'

These examples show that the same contextual specifications as in English are needed in subcategorizing Japanese verbs for indirect question complements. Thus we assume the category Q in Japanese.

In treating tense, we assume that Japanese has both infinitival and tensed sentences and define the past tense morpheme as TNS/S. Notice that this will prevent the tense morpheme from recurring, which is what we want and is born out by the incorrectness of example (9).

(9)

   drink-PAST-PAST

The way we treat the tense morpheme dictates the definition of the question particle as Q/TNS. Straightforward functional rules (R₂) and (R₃) in the Appendix specify the use of the past and question particles respectively. Example (4b) has analysis tree (10).

(10)

```
John-ga miruku-o nomimasitaka, Q
 /      \
 ka, Q/TNS John-ga miruku-o nomimasita, TNS
 /      \
 ta, TNS/S John-ga miruku-o nomimas-,S
```
The translation for (10) is given in (11) and its final line expresses a set of true propositions; i.e., it says that it is true that John drank milk if and only if he actually did it. This translation is obtainable because of our assumption that semantically, a question is a statement whose denotation is a function from possible worlds into a true proposition (i.e., a set of propositions).

Working Assumptions:

a) Japanese has phonetically null pronouns (PRO's).

b) Case markers are enclitics and get deleted when they are affixed to a null pronoun.

Now consider the following facts: although it is possible to use the question article independently of a wh- phrase, e.g., (4b), such independence is not possible with a wh- phrase, e.g., (5a).

Within the framework on which our analysis is based, there are two alternatives to capture this clausemate requirement, i.e., (6c).

Two alternatives:

a) Define the wh- phrase as Q/Q and use straightforward categorial cancellation.

b) Assign the wh- phrase expressions to wh- category (of NP type meaning) and make sure of input and output categorial conditions to insure the discontinuous dependency between the question particle and a wh- phrase.

If the first alternative is chosen, then the wh- phrase will be of type \langle s, \langle s, t \rangle, t \rangle, \langle s, t \rangle, t \rangle. This does not accord with our intuition that wh- phrases denote something like noun phrase meaning.

The second alternative, which is the one suggested by Karttunen, however enables us to treat wh- phrases as distinguished expressions of NP type denotation. Because of this semantic consideration, we adopt the second alternative and postulate wh- quantification rule (R₄).

R₄ uses substitution operation F₂,ₙ to replace a free variable PROₙ with a wh- phrase in an input string. The translation part of the rule involves lambda-abstraction over the free variable PROₙ, thus taking care of proper binding between a wh- phrase and an input questions expression. How this
rule works to derive example (4c) is illustrated in (14):

(14)

\[
\text{John-ga nani-o nomimasitaka, Q} \\
\text{/} \\
\text{nani, WH} \quad \text{John-ga PROi-o nomimasitaka, Q} \\
\text{/} \\
\text{ka, Q/TNS} \quad \text{John-ga PROi-o nomimasita, TNS} \\
\text{/} \\
\text{ta, TNS/S} \quad \text{John-ga PROi-o nomimasita, S}
\]

(15)

i) \text{John-ga PROi-o nomimasita} \quad \longrightarrow \text{drink'}(PP\{X_i\})(j)

ii) \text{ta} \quad \longrightarrow \lambda pHp

iii) \text{John-ga PROi-o nomimasita} \quad \longrightarrow \text{Hdrink'}(PP\{X_i\})(j)

iv) \text{ka} \quad \longrightarrow \lambda q q[vq & q = p]

v) \text{John-ga PROi-o nomimasita} \quad \longrightarrow \lambda p q[vq & q = \text{Hdrink'}(PP\{X_i\})(j)]

vi) nani' \quad \longrightarrow \lambda p \exists x[\text{thing'}(x) & P\{X_i\}]

vii) \text{John-ga nani-o nomimasitaka} \quad \longrightarrow \lambda p q[\text{thing'}(x) & \exists q[vq & q = \text{Hdrink'}(PP\{X_i\})(j)]]

The final line of (15) expresses the denotation of a set which contains each thing that John drank such that it is true that he drank it.

Our wh- quantification rule can be applied recursively to generate multiple wh- questions. How it can be done is illustrated in (16) and its translation is given in (17).

(16)

\[
\text{Dare-ga nani-o nomimasitaka, Q} \\
\text{/} \\
\text{dare, WH} \quad \text{PROj-ga nani-o nomimasitaka, Q} \\
\text{/} \\
\text{nani, WH} \\
\text{PROj-ga PROj-o nomimasitaka, Q} \\
\text{/} \\
\text{ka, Q/TNS} \\
\text{PROj-ga PROj-o nomimasita, TNS}
\]
Summarizing, the presence of the question particle *ka* in both yes-no and wh- questions has been captured by a) setting up syntactic category Q, b) assigning the question particle to the category Q/TNS, and c) placing an input condition on each of our question rules that specifies the categorial membership of input strings in terms of the category Q.

The placement of *ka* after a tensed verb phrase occurs as an automatic consequence of assuming a categorial hierarchy in which questions are ranked higher than tensed sentences.

The presence of both *ka* and a wh- phrase in a wh- question (i.e., the clausemate requirement (3a)) has been dealt with by formulating our wh-quantification so that it will combine a wh-phrase and a question phrase.

The possibility of deriving multiple wh- questions while constraining the number of question particles in a simplex question has been accounted for by a) allowing iterative application of our wh- quantification b) specifying the output of the rule as a member of the question category.

Yes-no revisited. The structure of yes-no answers consists of two parts: a) a response word (either *hai* or *iie*) and b) a sentence that follows it. (18b) confirms this pattern.
Notice that while sentences can exist on their own, 'yes-no' words cannot as far as their use in relation to questions is concerned. This forces us to assign functor roles to 'yes-no' words not to sentences. Thus we define them as ANS/TNS, where ANS stands for the category of answer expressions.

ANS is a truth-value denoting category like S and TNS. However, we do not put them in the same category for some syntactic reasons. To mention a few: the use of category ANS will stop undesirable recursion of response words and bad strings like (19) will not surface at all.

(19)
*Hai, iie, John-ga nemurimasita.
  yes  no
'lit. Yes. NO. John slept.'

Also, if no separate category is used to distinguish answers from declarative sentences, ungrammatical strings like those in (20) can be generated.

(20)
   'lit. Yes. Did John sleep?'
   'lit. Bill saw the movie which yes John saw.'

A categorial rule for introducing 'yes-no' words is stated as (R5) in the appendix. Now example (18b) has analysis trees (21a and b).

(21)
a.  Hai John-ga nemasita, ANS
       /   \
       /    \
  hai,ANS/TNS  John-ga nemasita,TNS

b.  Iie John-ga nemasendesita,ANS
       /   \
       /    \
  iie,ANS/TNS  John-ga nemasendesita,TNS

Semantics. In analyzing the semantics of the Japanese 'yes-no' words, we start from observations made by Jorden (1962) and Martin (1962) respectively. Jorden's observation is repeated below in (22) for convenience and Martin's is presented in (23).

(22)
Hai usually means 'what you just said is right'. In answer to affirmative questions, it corresponds to English 'yes', but in answer to negative questions that anticipate a negative answer, it usually confirms the negative and corresponds to English 'no'. Iie, the opposite of hai, means 'what you just said is wrong' and behaves in a parallel way: in answer to negative questions that anticipate a negative answer, it usually contradicts the negative and corresponds to English 'yes'.

(1962, p. 10)
The words hai and iie (or e) are used to mean 'what you've said is correct' and 'what you've said is incorrect.' So if you state a question in a negative way, the standard Japanese answer turns out to be the opposite of standard English 'yes' and 'no'. (1962, pp.364-365)

Both Jorden and Martin are in agreement on the point that Japanese 'yes-no' words pick up as their reference the question that has just been addressed to the speaker.

Notice that they use the phrases 'what you just said...' and 'what you've said...' to stress this point.

That 'yes-no' words are tied up with a particular question in discourse is supported by abnormal discourse exchanges like the one in (24).

(24) (uttered in the order given)

Speaker A: John-ga nemasitaka. 'Did John sleep?'
Speaker B: Mary-ga kimasitaka. 'Did Mary come?'
Speaker C: Hai, John-ga nemasita. 'Yes. John slept.'

What both Jorden and Martin might have been aware of but failed to point out explicitly is that 'yes-no' words are indexicals just like pronouns 'I' and 'you' and have a fully fixed reference. In the following we take care of this indexical property by postulating the indexical variable of question type Qa, whose assignment value in a given model can be fixed something like in (25).

(25) g(Qa) = the question that has just been addressed to the speaker.

Next thing that we need to examine is what is asserted by 'yes-no' words. Again, we begin by considering what Jorden and Martin have said about it.

(26) Jorden's

Hai usually means 'what you just said is right,' ... Iie, the opposite of hai, means 'what you just said is wrong'...

(27) Martin's

The words hai (or e) and iie are used to mean 'what you've said is correct' and 'what you've said is incorrect'...

(26) and (27) respectively contain a pair of expressions, namely 'right and wrong' and 'correct and incorrect,' which are in model-theoretic terms locationally invariant. Thus we interpret them into model-theoretic expressions 'factually true and false'.

Now we ask what is the linguistic commitment we make when we utter answer
statements. Let's take a particular case and try to provide an answer to this question. Suppose that we have just been asked question (18a) and are about to give an answer as felicitously as possible. By saying **hai** we commit ourselves to telling the hearer three things:

(28)

a) We know an answer to the question.

b) This answer is factually true.

c) When this answer is applied to the question, the result is affirmative. And if such is the case, then this answer is the one that constitutes the second part of the reply.

By saying **jie**, also we express three things. The first two are the same as in (28). The third point is the same as in (28c) except that in this case the result is negative.

(29)

a) The same as in (28a).

b) The same as in (28b).

c) When this answer is applied to the question, the result is negative. And if such is the case, then this answer is the one that constitutes the second part of the reply.

Now let's apply these three points to our case in hand. Upon responding to question (28a) with (28b) a) we know an answer, b) this answer is factually true, and c) when this answer is applied to question (28a), the result is affirmative and if such is the case, then this answer is that John slept. Similarly, a negative answer to the same question can be given a viable description.

Before we discuss the relationship between negative questions and 'yes-no' answers, we summarize what we have described of 'yes-no' words. Then we state it formally.

The 'yes-no' words in Japanese can be characterized in terms of the following four features.

a) They are indexical expressions and have fixed reference, which is the question just addressed to the answerer.

b) They express that the speaker knows an answer to the question.

c) That answer is factually true.

d) Applied to the question, this answer yields a positive or negative value and if such is the case, that answer is forthcoming.

The two intensional logic expressions in (31) formally represent the semantics of **hai** and **jie**.
In discourse (28), (28b) has analysis tree (32) and translation (33).

(32)

Hai John-nemasita, ANS

/  \

hai,ANS/TNS John-ga nemasita,TNS

(33)

i) John-ga nemasita' —> Hsleep'(j)

ii) hai' —> \( \lambda p \, q [ q \land [Q_a(q) —> q=p] ] \)

iii) hai John-ga nemasita' —> \( \lambda q [ q \land [Q_a(q) —> q=Hsleep'(j)] ] \)

Recall that because of the indexical nature of 'hai', the \( Q_a \) above is actually (28a). If we replace it with the intentional logic expression of (28a), we will obtain (34), which is a true proposition if and only if it is true that John slept.

Negative questions and 'yes-no' words. We started this paper by noting the well-known contrast between English and Japanese in the use of 'yes-no' words in answer to negative questions. That is, the Japanese yes corresponds to the English no and the Japanese no to the English yes. Emphasizing this difference, Jorden goes on to say:

(34)

To sum up: the meaning of hai and iie occurring in answer to a yes-no question usually depends on the inflecting form of the preceding questions [positive or negative]. . .(1962, p. 11).

Is Jorden correct in asserting that a) the meaning of the Japanese 'yes-no' words is not constant and b) it varies depending on whether the preceding question is negative or positive? Our answer is a definite 'no'. In other words we say that the meanings of those words are fixed and not dependent on the preceding question. This will become clear as we consider cases like those in (35).

(35)


sleep-not-PAST-Q

'Didn't John sleep?'

Case I:

Speaker B: (knowing that John didn't sleep)


yes

'No. John didn't.'
sleep-PAST
'lit. Yes. John did.'

Case II:

Speaker B: (knowing that John slept)

no
'Yes. John did.'

'lit. No. John didn't.'

We will examine Case I first. Compare (36a) and (36b), which show the syntactic and semantic derivations of (35b and c) respectively in the present analysis.

(37)

Case I  \[ \lnot \text{Sleep}'(j) \] = 1

a. Hai, John-ga nemasendesita, ANS

\[ \begin{array}{c}
\text{hai,ANS/TNS} \\
\text{John-ga nemasendesita,TNS}
\end{array} \]

ai) hai' \[ \rightarrow \lambda p]q[q \land [Q_\alpha(q) \rightarrow p = q]]

a ii) John-ga nemasendesita' \[ \rightarrow \lnot \text{Sleep}'(j) \]

a iii) hai, John-ga nemasendesita' \[ \rightarrow \exists q[q \land [Q_\alpha(q) \rightarrow p = \lnot \text{Sleep}'(j)]]

\[ Q_\alpha = \lambda p]q[q \land q = \lnot \text{Sleep}'(j)] \]

a iv) hai, John-ga nemasendesita' \[ \rightarrow \exists q[q \land \exists p[\lnot p \land p = \lnot \text{Sleep}'(j)]]

\[ \rightarrow q = \lnot \text{Sleep}'(j)] \]

b. Hai, John-ga nemasita,ANS

\[ \begin{array}{c}
\text{hai,ANS/TNS} \\
\text{John-ga nemasita,TNS}
\end{array} \]

b i) hai' \[ \rightarrow \text{the same as in (37ai)} \]

b ii) John-ga nemasita' \[ \rightarrow \text{Sleep}'(j) \]

b iii) hai, John-ga nemasita' \[ \rightarrow \exists q[q \land [Q_\alpha(q) \rightarrow p = \text{Sleep}'(j)]]

\[ Q_\alpha = \lambda p]q[q \land q = \lnot \text{Sleep}'(j)] \]

b iv) hai, John-ga nemasita' \[ \rightarrow \exists q[q \land \exists p[p \land p = \lnot \text{Sleep}'(j)]]

\[ \rightarrow q = \text{Sleep}'(j)] \]
Our analysis assigns a value 'true' to good answer (35b) and a value 'false' to bad answer (35c). Needless to say that is what we want. A quick consideration of Case II shown below shows that our analysis accounts for the proper use of the word iie in answer to negative questions.

(38)
Case II \[ H_{\text{sleep}}'(j) \] = 1

a.

\[
\begin{align*}
\text{iie, John-ga nemasita,ANS} \\
\text{iie,ANS/TNS} \\
\text{John-ga nemasita,TNS}
\end{align*}
\]

ai) \[
iie' \rightarrow \lambda p \exists q \left[ q \land \neg Q_{a}(q) \rightarrow p=q \right]
\]
aii) \[
\text{John-ga nemasita' } \rightarrow \text{H_{sleep}'}(j)
\]
aiii) \[
iie, \text{John-ga nemasita' } \rightarrow \exists p \left[ p \land \neg Q_{a}(p) \rightarrow p=H_{sleep}'(j) \right]
\]

Q_{a}=\lambda q \left[ \neg q \rightarrow \text{H_{sleep}}'(j) \right]

aiv) \[
\exists p \left[ p \land \neg \forall q \left[ q \lor q=H_{sleep}'(j) \right] \rightarrow p=H_{sleep}'(j) \right]
\]

b.

\[
\begin{align*}
\text{iie, John-ga nemasendesita,ANS} \\
\text{iie,ANS/TNS} \\
\text{John-ga nemasendesita,TNS}
\end{align*}
\]

bi) \[
iie' \rightarrow \text{the same as in (37ai)}
\]
bi) \[
\text{John-ga nemasendesita' } \rightarrow \text{H_{sleep}'}(j)
\]
bi) \[
\text{John-ga nemasendesita' } \rightarrow \exists p \left[ p \land \neg Q_{a}(p) \rightarrow p=H_{sleep}'(j) \right]
\]

Q_{a}=\lambda q \left[ \neg q \rightarrow \text{H_{sleep}}'(j) \right]

biv) \[
\exists p \left[ p \land \neg \forall q \left[ q \lor q=H_{sleep}'(j) \right] \rightarrow p=H_{sleep}'(j) \right]
\]

To recapitulate, our semantic analysis has been formulated solely on the basis of data containing 'yes-no' words in answer to positive questions. However, our account of (35) has revealed that it is also applicable to 'yes-no' words in answer to negative questions of the type represented by (2). This result is surprising because it suggests that in a uniform way, our analysis can take care of the alleged polarizing behavior of 'yes-no' words like the one illustrated by the contrast between (1) and (2).

As far as the negative question case we have just examined, the use of 'yes-no' words is in contrast between Japanese and English. However, such a contrast is not always present as we noted back in section 1. Sometimes their use seems to be the same in the two languages. Consider again the examples in (3), which are repeated below for convenience.

(39)

   'Isn't it the case that John walked?'
   'Yes. John did.'

c. Iie, John-ga arukimasendesita.
   'No. She didn't.'

(39a) is a negative question. However, the use of 'yes-no' words is just like that of English and the expected semantic shift does not take place. Is the present analysis capable of handling this case? If it is, then our analysis will cover all of the three cases we have presented in section I, which have forced conventional grammars to provide non-uniform semantic accounts of the Japanese 'yes-no' words.

The most widely accepted account of the semantics of patterns no desu and no zya arimasen is that they are factives and implicatively presuppose the truth of linguistic contents embedded under them. However, it seems wrong to assume that they belong to the same class as real implicative factive verbs like wasure 'forget'. This is because they behave differently under negation. Consider (40).

(40)

a. true factive: the presupposition (that Bill walked) remains the same under negation.

John-ga Bill-ga aruita no-o wasureta.
   that forget-PAST
   'John forgot that Bill walked.'

John-ga Bill-ga aruita no-o wasuremasendesita
   forget-not-PAST
   'John didn't forget that Bill walked.'

b. no desu and no zya arimasen: negation affects the truth value of the embedded content.

Bill-ga aruita no desu.
   'It is the case that Bill walked.'

Bill-ga aruita n zya arimasen.
   'It is not the case that Bill walked.'

Under negation, presuppositions of factive verbs are not affected. However, the examples in (40b) show that it has an effect on the factivity of a complement of the verb no desu, and it reverses its truth value. This means that the extensional meaning of no desu and no zya arimasen expresses denotatively the truthhood of propositions that they predicate. In order to capture this property, we need to include the truthhood requirement in their assertion parts. Thus we give the translation in (41).

(41)

\[
\text{no desu'} \quad \rightarrow \quad \lambda \mathbf{f} \Gamma [\mathbf{v}_\mathbf{r} \land r = \mathbf{p}]
\]

\[
\text{no zya arimasen} \quad \rightarrow \quad \lambda \mathbf{p} \wedge \mathbf{f} [\mathbf{v}_\mathbf{r} \land r = \mathbf{p}]
\]
Now example (39a) has analysis tree (42) and translation (43).

(42)

```
John-ga aruita n zya arimasenka, Q
/       \
/            \\
ka, Q/TNS
\       \\
John-ga aruita n zya arimasen, TNS
/       \\
/            \\
no zya arimasen, TNS/TNS
                \
John-ga aruita, TNS
```

(43)

i) John-ga aruita → Hwalk'(j)
ii) John-ga aruita n zya arimasen' → (∀r [∀r & r = Hwalk'(j)]
iii) John-ga aruita n zya arimasenka' → λp(∀q [∀q & q = ¬ Hwalk'(j)]

Notice that the last line of (43) says that this question denotes value true if and only if it is true that John didn't walk. (39c) will be accepted as a legitimate answer.

Now consider (44), which represents syntactic and semantic derivations of example (39b) in the present analysis.

(44)

```
Hai, John-ga arukimasita, ANS.
/       \\
/            \\
Hai, ANS/TNS
\       \\
John-ga arukimasita, TNS
```

i) John-ga arukimasita' → Hwalk'(j)
ii) Hai' → λp[∀q [∀q & (Qa (q) → q = p]]
iii) Hai, John-ga arukimasita' → (∃p [∀p & (Qa (q) → p = Hwalk'(j)]]

\[ Q_a = \text{(43iii)} \]

iv) (∃p [∀p & (∀q [∀q & q = ¬ Hwalk'(j)]) → p = Hwalk'(j)]

Notice that the antecedent of the material implication is false in this instance. As long as it is felicitous, (39b) is construed as a good answer (i.e., in the typical account, this is said to be the matching between the questioner's presupposition and the answer provided). The case represented by (39c) can be explained in a similar fashion.

In the past the following kind of dichotomous explanations have been offered for the case we have just considered. It goes like this: there are two questions with respect to presuppositions.

(45)

a) those which contain presuppositions (i.e., often referred to as questioner's anticipation)

b) those which contain no presuppositions (i.e., neutral questions)
It has been claimed that with respect to the first type, the Japanese 'yes-no' words are used just to express agreement or disagreement on the speaker's part with what has been presupposed. When used in response to neutral questions, they affirm or refute questioned facts. A classical example of the type a) is a question like (39a). Kuno (1973), for instance, explains that (39b) is an acceptable answer if and only if question (39a) is construed as a neutral question without any presuppositions. Our analysis says that irrespective of presuppositions, it is a good answer.

What the present analysis has shown us, however, is that it is false to attempt to account for the alleged dichotomous use of the Japanese 'yes-no' words in terms of a classificatory system of presuppositions. This is so because such an analysis will miss the point that in cases like (39) it is not a presupposition but an assertion of truthhood that is affirmed or denied.

Conclusion. I have presented a uniform analysis of 'yes-no' words in Japanese within the framework of Montague grammar. In so doing, an assumption is made that questions and answers interact with each other and constitute an interrogative system. Syntactically, we have followed Karttunen's assumption that a question is a statement that denotes a function from our knowledge about how the world can be into the actual status of the world.

By adopting our semantic analysis of questions, we have succeeded in formulating a uniform account of the use of 'yes-no' words in Japanese. The thrust of our analysis is the idea that 'yes-no' words are indexicals and semantically interplay with their reference. As far as the alleged semantic shift of 'yes-no' words in relation to different types of 'yes-no' questions is concerned, it has been shown that it is not the meaning of those words that shifts according to syntactic environments but a perceived shape of the world considered valid in a given linguistic situation.
# APPENDIX

<table>
<thead>
<tr>
<th>LEXICON</th>
<th>CAT</th>
<th>BASIC EXPRESSIONS</th>
<th>TRANSLATIONS</th>
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<tbody>
<tr>
<td>NP</td>
<td>John</td>
<td>( PP { j } )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bill</td>
<td>( PP { b } )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROi</td>
<td>( PP { i } )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROj</td>
<td>( PP { j } )</td>
<td></td>
</tr>
<tr>
<td>CN</td>
<td>miruku</td>
<td>milk'</td>
<td></td>
</tr>
<tr>
<td>WH</td>
<td>dare</td>
<td>( \lambda P\exists x[\text{person}'(x) \land P{x}] )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nani</td>
<td>( \lambda P\exists x[\text{thing}'(x) \land P{x}] )</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>aruk-</td>
<td>walk'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ne-</td>
<td>sleep'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nemur-</td>
<td>sleep'</td>
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</tr>
<tr>
<td>TV</td>
<td>nom-</td>
<td>drink'</td>
<td></td>
</tr>
<tr>
<td>IV/Q</td>
<td>sir-</td>
<td>know'</td>
<td></td>
</tr>
<tr>
<td>TNS/S</td>
<td>ta</td>
<td>( \lambda ptp )</td>
<td></td>
</tr>
<tr>
<td>Q/TNS</td>
<td>ka</td>
<td>( \lambda P\exists q r[\forall r \land r = p] )</td>
<td></td>
</tr>
<tr>
<td>ANS/TNS</td>
<td>hai</td>
<td>( \lambda P\exists q[q \land \neg Qa(q) \implies q = p] )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>iie</td>
<td>( \lambda P\exists q[q \land \neg Qa(q) \implies q = p] )</td>
<td></td>
</tr>
<tr>
<td>TNS/TNS</td>
<td>no desu</td>
<td>( \lambda P\exists q[q \land q = p] )</td>
<td></td>
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<tr>
<td></td>
<td>no zya arimasen</td>
<td>( \lambda P\neg q[q \land q = p] )</td>
<td></td>
</tr>
<tr>
<td>S/S</td>
<td>masen</td>
<td>( \lambda p \neg p )</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>( \neg )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TNS</td>
<td>( \neg )</td>
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<td></td>
</tr>
<tr>
<td>ANS</td>
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<td></td>
</tr>
<tr>
<td>Q</td>
<td>( \neg )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## RULES

\( R_1 \)  \( B \subseteq A \)

\( R_2 \) If \( \alpha \in P_{\text{TNS/S}} \) and \( \beta \in P_{\text{S/S}} \), then \( F_1 (\alpha, \beta) \in P_{\text{TNS}} \), where \( F_1 (\alpha, \beta) = \beta - d \) and translates as \( \alpha' (\beta') \).

\( R_3 \) If \( \alpha \in P_{Q/TNS} \) and \( \beta \in P_{\text{TNS}} \), then \( F_1 (\alpha, \beta) \in P_Q \), where \( F_1 (\alpha, \beta) = \) the same as in \( R_2 \) and translates as \( \alpha' (\beta') \).

8.17
R₄ If \( \alpha \notin P_{WH} \) and \( \beta \notin P_Q \), then \( F_{2,n}(\alpha, \beta) \notin P_Q \), where \( F_{2,n}(\alpha, \beta) = \gamma \) comes from replacing the first occurrence of \( \text{PRO}_n \) in \( \beta \) by \( \alpha \) and the other occurrences of \( \text{PRO}_n \) in \( \beta \) by \( \text{PRO} \) respectively and \( F_{2,n}(\alpha, \beta) \) translates as \( \lambda p \alpha. \{ \text{PRO}_n(\beta(p)) \} \).

R₅ If \( \alpha \notin P_{ANS/TNS} \) and \( \beta \notin P_{TNS} \), then \( F_3(\alpha, \beta) \notin P_{ANS} \), where \( F_3(\alpha, \beta) = \alpha \beta \) and translates as \( \alpha(\alpha') \).

R₆ If \( \alpha \notin P_{TNS/TNS} \) and \( \beta \notin P_{TNS} \), then \( F_1(\alpha, \beta) \notin P_{TNS} \), where \( F_1(\alpha, \beta) \) is the same as in \( R_2 \) and translates as \( \alpha(\alpha') \).

REFERENCES


Affective vs. Semantic Processing: 
Toward a Teleological View of Language

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Brigham Young University

I. INTRODUCTION

The relationship of linguistics to cognitive psychology has been well drawn. Many have listed the development of modern structuralist linguistics as one of the major contributing factors to the rise of modern cognitive psychology (Reynolds & Flagg, 1977, for example). Some other important points should be reviewed here in order to be clear about the major argument of this paper.

In both of these disciplines the flow of information is traced through a system. In cognitive psychology information is traced through various stores and processors to the resultant behavior; in linguistics information is traced from essential meaning through the language system to a surface manifestation.

Both cognitive psychology and linguistics view behavior to be a function of rules and transformations. Information is transformed according to orderly processes and rules. There is, therefore, in both disciplines a belief in and emphasis on an underlying structure which determines surface manifestations of language acts and behavior.

These commonalities of cognitive psychology and linguistics come from a common heritage in modern structuralist philosophy. There is also a central problem for each field of study which has its roots in common with those of the problem in the other field. For cognitive psychologists, the problem is the image of human nature, and how best to represent it in terms of processes. For linguistics, the problem is what must be the structure of language in the human being. Both present their subjects—cognition and language acts—as results of rather complex but orderly processes deriving from some structure which comes with our nature. When we study/observe behavior, we infer about the cognitive structure from which it arose. When we study language behavior, we infer about the linguistic system from which it arose.

Here is where linguists become psychologists whether they want to or not. A model of language or language capacity rests upon and has implications for—a model of the human psyche. Language makes a statement and conveys meaning about human psychology, both on the level of competence and performance. 

There are closer and more intimate relations between cognitive psychology and linguistics which we must introduce for purposes of the presentation. First, cognitive psychology and linguistics meet in the field of semantics and semantic processing. Semantics can be seen as the "bottom line" of linguistics manifested for example in the idea of a "deep structure" or basic unit of meaning. Semantics also seems to be
the "bottom line" of cognitive science. If information is going to stay around in the cognitive system and accessible for very long, it must be processed "semantically," or "to a semantic level." This is the basis of our permanent knowledge (along with Tulving's (1972) episodic memory, but even here there is a "semantic" or "meaning" component).

II. MODELS OF MEMORY

Semantics or semantic processing lies at the heart of one of the core constructs and also one of the core distinctions in the sciences of cognition—the memory system. For example, it was shown in Ebbinghaus' early work (1885) that meaningfulness is troublesome. Ebbinghaus found that the meaning of his learning material got in the way of his study of the "pure" process of learning. He devised the "nonsense syllable" or CVC trigram to obviate the problem.

The received view of human memory has been the "structural model" or "duplex model" or memory (see Reynolds & Flagg, 1977; Bourne, et al., 1979; Kintsch, 1977; Solso, 1979; or most any other current cognitive psychology book) in which there are two distinct "stores" (1) short term memory and (2) long term memory.

Short Term Memory is of brief duration and limited capacity. In this store material is processed acoustically, visually, etc., but only the most elementary if any semantic processing is carried out. Rehearsal is necessary to keep the material available because it is not processed into some permanent semantic structure. If it endures, it's because it got passed on to Long Term Memory.

Long Term Memory is of longer (unlimited) duration and greater (unlimited) size. In this store material is processed "semantically," i.e., to a level of meaning. Here material fits into the extant structure of knowledge of the individual. Out of Long Term Memory the cognitive processes operate. From here decisions about "pertinence" (Norman, 1976), or "allocation" (Kahneman, 1973) are made. From here behaviors, and ideas are generated. From here language operates because here exist the raw materials on which language processes can work.

Recently, Craik & Lockhart (1972) have offered a radical alternative to the duplex theory of memory—the "depth of processing" model. This is a "process" rather than a "structural" model. The idea of two separate memory stores is seen as arbitrary and unnecessarily complex and unparsimonious. In this model the strength of the memory trace is a function not of which structural processor the material in question happens to reside in, but rather, a function of the "depth" to which it has been processed. The depth of processing in turn is a function of (a) the nature of the material, and (b) the nature of the task at hand (what is being done to the material, and for what purpose). Deep processing in this model means "semantic" processing.

Research support for the Depth of Processing model has come from various sources, some of the most direct evidence has come from studies on "incidental learning." In this paradigm (Hyde & Jenkins, 1969, 1973;
Rosenberg & Schiller, 1971; Parkin, 1979) subjects are presented a list of words. Note that these are language materials. The first group is asked to learn the words intentionally. The second group is asked to deal with the words semantically by performing some semantic task—most commonly to rate the words for pleasantness on a pleasant (PL) to unpleasant (UPL) dimension. The third group is asked to perform a lower order task with the words, such as search for a particular letter or estimate the number of letters. This is a non-semantic task. These second and third tasks are called incidental tasks. A recall test is then given to all of the groups. The semantic and nonsemantic groups are not expecting it. Therefore, any learning they show would be incidental.

It is found (as in Hyde & Jenkins, 1969) that the group which performs the semantic task does about as well on the recall task as the group that intentionally learns. Both do better than the non-semantic task group. The notion is that the semantic task results in "deeper" processing and thus better memory (even without conscious effort).

The principle criticism of the depth of processing model has been the lack of an independent measure of "depth" as well as lack of an adequate theory of depth. Why for example, should "deeper" be "deeper," and/or why is "semantic" processing "deep" processing? (See Baddeley, 1978.) The only evidence for depth is better recall, but better recall is precisely what is predicted from depth. It is to this issue that the research described here is in large part addressed.

III. ISSUES OF THE PRESENT STUDY

In the incidental learning literature which has addressed this issue, the "semantic" task has most often been rating the words on a "PL-UPL" dimension. Only rarely have other kinds of semantic processing been employed (Parkin, 1979; Block & Reed, 1978; Hyde & Jenkins, 1973). The main effect (i.e., better memory) for semantic tasks has been well validated. The PL-UPL rating task is obviously a semantic task and calls for semantic level processing. However, it also calls for an affective evaluation. The difference between the effects of semantic and affective incidental tasks has not been widely investigated. It might be that affective processing involves different processes and produces different results than "semantic processing." If the superiority of affective processing could be demonstrated, a candidate for an independent measure and theory of depth would emerge.

There is some evidence for the relative superiority of affective over semantic processing. Evidence for the distinctiveness of affective processing comes from Toglia & Battig (1978). Ratings of PL over 2,854 words do not correlate highly with ratings on six other semantic dimensions: concreteness, imagery, categorizability, meaningfulness, familiarity, and number of attributes. Packman & Battig (1978) had subjects rate words on each of these six semantic dimensions as well as PL-UPL. Incidental recall and recognition scores showed subjects in the PL-UPL condition to have superior recall to that of the other groups and no difference among the other groups emerged.
These studies lead to the conclusion that affective processing is fundamentally different from other kinds of semantic processing, or, put another way (more linguistically), the processing of affective qualities of words (language material) is different from, and somehow superior to, the processing of other semantic qualities.

The research presented here extends and cross validates the findings of Packman & Battig in several important ways. We also attempted to replicate the findings of Hyde & Jenkins (1969). First, Packman & Battig used visual presentation. We used auditory presentation of words as a replication of Hyde & Jenkins (1969), and 24 words as opposed to 50 in the Packman and Battig study. Second, dichotomous ratings were made rather than ratings on an extend scale (this might inhibit full semantic processing). The present study included an intentional group as a control (as in Hyde and Jenkins). The words presented were highly related (Hyde and Jenkins). There were six non-antonymic first associates and six antonymic first associates, in the list. Finally, cluster scores were analyzed as Hyde and Jenkins did, but Packman and Battig did not.

It might be beneficial here to step outside this experimental paradigm to introduce another line of research. These variables, affective processing and antonymic association, were chosen for the present study for theoretically important reasons. The attempt is to unite two bodies of research and introduce a teleological, humanistic approach to the study of cognitive processing and hence, linguistics.

These two variables were taken from Rychlak's (1979) Logical Learning Theory (LLT). Rychlak proposes that behavior (including linguistic and cognitive behaviors) proceeds in a pro forma way, rather than in a reactive way. Instead of speaking of behavior as a response, Rychlak has introduced the notion of a teloeponse. The idea is that behavior is always telic--teleological--it is carried out "for the sake of" some conception or intention on the part of the person rather than in response to stimuli or conditions. Logical Learning Theory presents a teleological account of human behavior based on final causes. Behavior is always, therefore, purposive and intentional. Such a view is at odds with efficient-cause S-R psychology, structuralist, formal cause psychology, and other quasi-mechanistic systems.

Rychlak offers a modus operandi of human mentation which does not rely on material- or efficient-cause determinism nor an external natural teleology to account for human behavior. Intentional behavior, and thus human freedom, or agency are possible. Two concepts are important in this modus operandi. First, Rychlak proposes (and validates via empirical research) the operation and existence of a neo-Kantian category of the understanding called affective assessment. Human beings are born with the capacity to affectively assess and evaluate things with which they come into contact. Things favorably assessed tend to be selected for elaboration and made more meaningful, or, affirmed and selected to become the grounds "for the sake of which" behavior (overt or cognitive) takes place. This process is called meaning-extension. We tend to further meanings along a positive affective dimension. One thing this implies is that people should normally learn what they like
faster than what they dislike. This effect has been demonstrated in a series of studies carried out over the last 20 years with material ranging from words to nonsense syllables, to pictures, to names, to items on IQ tests, to psychology experiments themselves. It should be noted that it is also possible that people learn disliked negative items more readily than liked. Several pathological groups show this, as well as people who dislike the experiment to begin with.

It is important to note that this affective assessment of material has been shown to be (a) independent of the associative value of the material (i.e., past experience, frequency, etc.), and, (b) idiographic in nature (i.e., it must be assessed individually and it varies from person to person); it is not a normative process.

The second important principle from Logical Learning Theory is that human beings are endowed with the capacity to think and reason dialectically (i.e., in terms of opposites or, more broadly, in terms of alternatives). This capacity for dialectical, creative, and potentially arbitrary thought is, for Rychlak, the basis of human freedom. One need not be determined by previous input if he or she has the capacity to generate alternatives and thus call into question his or her own mentation. It is noted here, therefore, that any theory which does not have place for dialectical reasoning, relying instead on unipolar demonstrative principles, must miss the human essence of human nature and must degenerate into quasi-mechanistic determinism.

These two concepts then, affective assessment, and the dialectic were chosen for investigation because they are difficult for behavioristic approaches or cybernetic approaches to account for. Indeed, in a cognitive system any processor which can affectively evaluate or reason dialectically must possess all the characteristics and capacities of a real, intact human being. The alternative to this conception of free affective evaluation is that thinking is only unipolar and logical and that affect is a product of past association. Such would be a behavioristic explanation which most cognitive psychologists and linguists are motivated to avoid. For these reasons, then, affective assessment and oppositional association were chosen for inclusion in the present study.

V. METHOD AND RESULTS

Four groups of subjects (randomly assigned) participated in the study. Each was given a different task to perform relative to a group of words as follows: 1) The Intentional group was instructed to remember as many words as they could; 2) The Like-Dislike group was instructed to rate words indicating whether they liked or disliked them; 3) The Concrete-Abstract group was instructed to decide whether each word brought to mind a concrete image or an abstract idea on a dichotomous scale; 4) The Letter Task group was instructed to estimate the number of letters in each word by means of a dichotomous, more than five letters or less than five letters scale.
The words were common words taken from the Palermo & Jenkins (1964) word association norms. Six were non-antonym first associate pairs, six were antonym first associates. The order of presentation was randomized. The words were presented on a tape recorder at the rate of one word every two seconds. All groups were then asked to recall all the words they could, in any order in a free recall format.

An analysis of variance of the total recall scores (see Table I) showed a significant main effect for groups ($F(3,41)=11.329$, $p<.0001$). The Like-Dislike group performed better than the Concrete-Abstract group which performed better than the Intentional group which performed better than the Letter Task group. A Newman-Keuls analysis showed only the recall of the Like-Dislike group to be better than the rest ($p < .05$).

### Table I

Mean Recall Scores for Intentional Group and Three Incidental Groups

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>MEAN RECALL</th>
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<tbody>
<tr>
<td>LIKE-DISLIKE</td>
<td>16.75*</td>
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<tr>
<td>CONCRETE-ABSTRACT</td>
<td>12.33</td>
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<tr>
<td>LETTER TASK</td>
<td>11.08</td>
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<td>INTENTIONAL</td>
<td>10.83</td>
</tr>
</tbody>
</table>

* This mean is significantly different from the other group means according to Newman-Keuls procedures at .05 probability level.

Since the words were associated we can assess the amount of clustering which took place during recall. Cluster ratios were computed for each subject in all groups (see Table II). A cluster ratio is defined as the number of clusters divided by opportunities to cluster. Analysis of variance showed a main effect for group ($F(3,41)=4.808$, $p<.006$). Newman-Keuls analyses showed the Intentional group clustered less than the other groups. This might reflect a bad learning strategy for that group.
Table II

Mean Cluster Scores* for Intentional Group and Three Incidental Groups

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>CONCRETE-ABSTRACT</th>
<th>LIKE-DISLIKE</th>
<th>LETTER TASK</th>
<th>INTENTIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN CLUSTER SCORE</td>
<td>.411</td>
<td>.390</td>
<td>.329</td>
<td>.169**</td>
</tr>
</tbody>
</table>

*A cluster score is defined as clustering/opportunity to cluster.

**This mean is significantly different from the other group means according to Newman-Keuls procedure at .05 probability level.

When the type of semantic relationship is taken into account (see Table III), once again there was a significant main effect for the group factor ($F(3, 41) = 11.059, \ p < .001$). Also there was a significant main effect for the semantic relationship of the words; antonym pairs were recalled more than non-antonym pairs. Tests of simple main effects showed antonyms were recalled better than non-antonyms only for the Like-Dislike and Concrete-Abstract groups ($F(1, 41) = 22.958, \ p < .001$).

Table III

Mean Recall Scores of First-Associate and Antonym Pairs for Intentional Group and Three Incidental Groups

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>LIKE-DISLIKE</th>
<th>CONCRETE-ABSTRACT</th>
<th>LETTER TASK</th>
<th>INTENTIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST ASSOCIATE PAIRS</td>
<td>2.90*</td>
<td>1.36*</td>
<td>1.55</td>
<td>1.46</td>
</tr>
<tr>
<td>ANTONYM PAIRS</td>
<td>4.46*</td>
<td>3.46*</td>
<td>2.18</td>
<td>1.64</td>
</tr>
</tbody>
</table>

* Means for first-associate pairs and antonym pairs are significantly different for these groups according to tests of simple effects.

There was thus a significant interaction of group with semantic relationship. It can be seen that only the Like-Dislike and Concrete-Abstract groups seemed to benefit from semantic relations in...
the stimulus words and that (significantly) antonymic relationship was more conducive to recall than non-antonymic relation. This is graphically represented in Figure I.

![Figure I](image)

Figure I

Mean Recall Scores of First-Associate and Antonym Pairs by Intentional Group and Three Incidental Groups

VI. Discussion

There are several important implications of the above findings for both cognitive psychology and linguistic theory. From this research and that of Battig and his colleagues, a possible independent measure of depth has emerged. Deep processing is affective processing. Affective assessment is, therefore, a measure of depth of processing. Rychlak's work has previously demonstrated that affect has a unique effect on learning. Packman & Battig (1978) suggest that it is not affect per se which accounts for superior memory, but the distinctiveness of the affective processing task as compared to the other semantic tasks. This is an alternative which can be empirically investigated. Present research is being addressed to this question.

Cognitive theory has difficulty accounting for affective evaluation and preference. Either it has been largely left alone in the literature or there has been posited an "affective processing box" in the model which takes care of affect (usually this processor has all the properties of a real person). Other theories maintain that affective assessment comes out of Long Term Memory as a product of past association history. Cognitive theory insofar as it embraces this explanation is not far
removed from behaviorism. Rychlak's work seems to argue against this type of explanation.

There is in linguistic theory (as we have studied it) a parallel difficulty: how can the present results be accounted for by linguistic theory? Affect has been largely left alone by linguistic theories as well. We might ask, why should "affective assessment" make a difference in the processing and remembering of linguistic material? Specifically, why should affect make more of a difference than other "semantic" processes? There seem to be two ways of accounting for affect: (a) teleologically as suggested here, or (b) on the basis of past history and experience, not far removed from behavioristic psychology. It would appear also that affect doesn't behave like other semantic features and cannot, therefore, be dealt with as a feature among others. It appears difficult to account for the effect of affect with a "feature analysis" approach.

How can linguistic theory account for the relative efficacy of antonymic association over non-antonymic association? The most obvious answer is that antonym associations are stronger than other kinds. The larger question is still why that should be the case. How can we accommodate these dialectical processes in our linguistic theory?

The concept of affective assessment and its influence on learning and language (and also the concept of the dialectical nature of language) seem to argue in favor of a teleological, intentional, creative theory of language and cognition. Language and cognition can be more profitably seen as products of a creative purposive person rather than some suprapersonal and thus impersonal linguistic or cognitive "system"—which can (for purposes of study) be "abstracted from its occasional bearer" (Schrag 1975). Furthermore, the effects of affect (through the works of Rychlak) are shown to be idiographic and unique rather than nomothetic or normative. Linguistic theory, by its very self-definition seems to be pursuing the discovery and exploration of normative and nomothetic principles which account for language behavior. The results presented here would suggest that linguistic theory must account for idiosyncratic affective processing.

When the type of teleological model being discussed here is applied to linguistics and language acquisition, a picture of the language act as more creative, more affectively toned, and more projective emerges. Language is thus seen as a creative endeavor rather than the end product of the operation of cognitive processes or laws associated with an innate structure of language. Usage of language is to be understood in terms of its affectively toned meaningfulness to the user, and in terms of the goal or intention toward which it is directed. Language can or ought to be approached as the product and project of an intentional human being, rather than as product and project of itself. The study of behavior should yield as much insight into the "beaver" as it does into the cognitive structure from which it comes. The study of language behavior should yield as much insight into the language user as it does into the linguistic system from which it arises.
REFERENCES


THE EFFECTS OF MANIPULATING DIALECT AND INTONATION ON JUDGE RATINGS OF SPONTANEOUS AND CALCULATED ANSWERS

by

D. Cleve Barlow, Kwang O'o Lee, Bruce L. Brown

INTRODUCTION:

The research paradigm for this study follows the tradition of "matched-guise" studies established by Lambert (1967). The general idea of a matched-guise is to have a bilingual speaker produce voice samples in two different languages and have judges rate personality and intellectual qualities of the speaker based on these voice samples alone. Since the same person is rated in each language, the differences in his received rating for each linguistic "guise" are an index of the bias of raters towards those two languages.

Brown, Strong, and Rencher (1974) have extended this kind of "evaluative reactions to speech" methodology to an examination of the effects of computer manipulations of vocal paralinguistic properties. Figure 1 below is presented as a graphic illustration of synthetically manipulated voices using computer technology. The graph shows that persons were judged to be less benevolent and more competent as the rate of speech was increased. Figure 2 shows that both methods of manipulation of speech rate give the same results as those shown in fig. 1: as rate increases, benevolence ratings drop and competence
ratings increase; and as rate decreases, both competence and benevolence ratings drop.

---------------------------------------------
Insert figures 1 and 2
---------------------------------------------

While rate of speech was the primary manipulation in both the above citations, other studies incorporate dialect and intonation. (For a summary of early studies, see Brown, Strong, and Rencher, 1975.)

OBJECTIVES:

There are two principle objectives of this study: (1) to determine how manipulations (of intonation, of dialect, of spontaneous v.s. calculated responses, and of spoken v.s. written speech) affect judge ratings of the quality of the content of answers given by speakers of Hawaiian Pidgin (HP) and Standard American English (SAE) to a specific question; and (2) to demonstrate the notion that a total judgement is made (physiognomic perception), and then one looks for reasons to support one's choices.

For the first objective, the following directions were given to the judges: Try to ignore the sound of the person's voice - pronunciation, intonation, etc. - and rate only the quality of the content of the message. Further, inspite of the above direction, it was hypothesized that there would be significant results showing relative down-grading effects in judgements due to dialect and intonation manipulations. Such
ratings would be evidence that judges are not able to make
discriminations based on content (what the person says), but
that their judgements will be also largely determined by the
vocal qualities (how the person says something) of the speaker.
The actual content of the responses for a particular speaker was
the same for all manipulations.

METHOD:

Six native male Hawaiian Americans, residents of the Provo
and Orem city areas in Utah, were used as speakers in this
study. Each of the speakers was asked to write down an unposed
answer in Standard American English (SAE) to the following
question: "What is your opinion of racial quotas as a policy in
admitting minorities to colleges, and why?" No more than three
minutes was allowed for each speaker (Sp) to make his response.
After making the spontaneous response in SAE, each Sp was given
a fact sheet containing answers to the same question that other
persons had given.

With this added information, the Sps were asked to improve
upon their initial response. No time limit was set for Sps to
make the improvements, except it should be noted that no one Sp
took more than fifteen minutes to complete this task. So now,
each Sp had two answers to the question: first, an unposed or
spontaneous answer; and second, a more informative or calculated
answer, both written in SAE. Each Sp was then asked to
translate each of their two SAE answers to HP without altering
the content of each respective answer.

This procedure resulted in a total of four answers for each subject: (a) two in SAE (unposed or spontaneous, and improved or calculated), and (b) two in HP (unposed or spontaneous, and improved or calculated). The purpose here was to get all combinations of content and dialect. Each Sp was then audio-recorded on a Hitachi Model D-2335 cassette deck in the following manner.

The Sps were asked to recite each of their four answers in three different ways: (1) speaking in a normal voice, N, (2) speaking in a monotone voice, M, and (3) speaking in a highly expressive voice, H. As far as was reasonable, each Sp tried to maintain an even amplitude of voice for all three levels of intonation to limit influences that might later be judged as being due to variations in loudness.

The total number of recorded vocal samples for each Sp was 12, making available a total of 72 voice samples. It should be noted that a pertinent set of instructions was given to the Sps before the recordings began: they were cautioned not to make their voices too obviously monotonic (M) or overly highly expressive (H) thus causing a very unnatural sound to be produced. Rate of speech was generally consistent for within Sp samples. However, there was a noticeable slight decrease in the average rate for the monotonic samples compared with the other two parameters of voice intonation. Figure 3 shows the voice
manipulations for each speaker.

--------------------------
Insert figure 3
--------------------------

TESTING TAPES:

Six testing tapes containing 12 voices each were created from the 72 voice samples. Each Sp appeared twice on every test tape: (a) once in a SAE manipulation, and (b) once in a HP manipulation. A modified Graeco-Latin Square design (figure 4) was used to counterbalance speaker and manipulation position across the tapes.

--------------------------
Insert figure 4
--------------------------

JUDGE SUBJECTS:

The judge subjects (Ss) were 48 male and female undergraduate psychology students at Brigham Young University during the May/June 1981, spring term. Students were given extra credit for participating as judges in one of six groups. The six judging groups consisted of an average of 8 judges per group. The actual number of judges for each group were as follows: group 1 (8), group 2 (9), group 3 (8), group 4 (8), group 5 (7), and group 6 (8).

PROCEDURE:

Each judge (S) in a particular group was given 12 individual written answers and was asked to rate each one for quality (i.e., how good the answer was) by responding to a set
of ten questions about the answers (see figure 5). The judges marked a single point on a 9-point scale to indicate their judgement.

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Insert figures 5 & 6
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Next, after a brief interlude of approximately 2 minutes, each judging group listened to the corresponding vocal samples of the written answers (in the same order) played on a Crown reel-to-reel recorder, with a Kenwood KA-3700 audio amplifier and an electro-voice "Interface" speaker, and rated the quality of the answers on the same 9-point scale (see figure 6). Prior to the actual judging, however, three practice voices (consisting of at least one SAE and one HP sample) were played at the beginning of each tape to ensure instructions were understood and followed correctly by the judges.

One further task was asked of those judges who made extreme ratings, that is, if a judge gave a rating of either 1 or 9 in response to a question then he or she was asked to write down a brief statement as to why s/he made that choice. In order to help the judges do this, the test tape was replayed once more to refresh their memories.

DATA ANALYSIS AND RESULTS:

Two statistical procedures were adopted to analyse the data. First, a multivariate analysis of variance (MANOVA) was carried. All treatments had statistically significant results.
These results can be expected due to the large number of degrees of freedom for the error sums of squares for each treatment. However, by far the largest significant F-tests were those associated with dialect and then intonation treatments.

The second procedure involved the use of principal components factor analysis. The results of this analysis are used to give descriptive information to illustrate how each manipulation affects ratings. The principal components analyses allow one to make a two-dimensional graphic summary of the information in the 10 questions, as shown in figures 7 & 8 (see Brown and Bradshaw, 1982, for an explanation of how to read these figures). Overall, the two-dimensional representation accounts for 83% of the variance in the ratings on the 10 questions, and 17% remains as unique.

In figures 7 & 8, we can see that by far the greatest amount of variation is accounted for by the dialect manipulation. The SAE speakers were judged as being more wise, educated, and more knowledgeable, etc.; while the HP speakers were judged to be unwise, uneducated and backward, etc. High intonation sounded more compassionate in the spontaneous manipulation and low intonation was more compassionate for the calculated manipulation.

One final observation, that of the effect of adding voice,
is apparent from the results shown in figures 9 and 10.

-------------------------------
Insert figures 9 and 10
-------------------------------

With regard to both SAE and HP, the addition of voice tends to upgrade judgements on ratings of speaker knowledge. In addition, the increased intonation effect is that of making persons sound more compassionate.

CONCLUSION:

One of the major conclusions arising out of this study is that when one is operating in an English-speaking community it is imperative that one use the best spoken English he knows in order to be perceived in a favorable light. Although there is much talk about the equality of dialects, our results indicate that a judge can't separate content from dialect in judging why the total impression of a spoken answer is bad.

Also, it is important to realize that first impressions have a profound influence on judgements and perceptions of others. We tend to make a general assessment of things first, and it is only later, if we are prompted to, that we look for specific reasons for making our judgements, reasons that may have little to do with why we judged as we did.
REFERENCES


APPENDIX:

(Figures 1 - 10)
Fig. 1. Means over speakers of factor scores for the competence factor and the benevolence factor. (From Smith et al., 1975)
Factor scores averaged over speakers for normal voice and the six manipulations, superimposed upon the rotated factor pattern of 15 bipolar adjectives - "Childhood myths"

Factor scores of averaged ratings superimposed upon the rotated factor pattern - "Admissions quota"

Factor scores of averaged ratings superimposed upon the rotated factor pattern - "Proposition 13"

Note: For clarity only the right sides of the bipolar adjectives on the personality rating sheet are shown in these three figures. The opposite pole is obvious for most, but for "plain" the paired opposite is "good-looking". The vectors for the four ratings of the adequacy of the consent of each answer are labelled in all bold letters.

Figure 2 "Synthesized" and "Acted" Manipulation
<table>
<thead>
<tr>
<th>SPEAKER</th>
<th>STANDARD (1)</th>
<th>PIDGIN (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOW Intonation (2)</td>
<td>MEDIUM Intonation (1)</td>
</tr>
<tr>
<td></td>
<td>Spont (1)</td>
<td>calc (2)</td>
</tr>
<tr>
<td>A</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3 Voice Manipulations
**ORDER OF VOICE SAMPLES**

*Figure 4 Latin Square Design of Six Test Tapes*
Question: What is your opinion of racial quotas as a policy in admitting minorities to colleges? Why

Answer:

There shouldn't be any type of quotas. A person should be allowed to attend college if he is capable of passing the entrance exams, or demonstrates the ability to enter college and perform well.

(1) How wise is the answer?  
very wise
unwise
(very wise)

(2) How much background knowledge does he have on the racial quotas question?  
very much
little
(very much)

(3) How sensitive is the speaker to the racial quotas issue?  
very insensitive
sensitive
(very insensitive)

(4) From what he said, how would you rate his general intellectual ability?  
very high ability
low ability
(very high ability)

(5) From what he said, how educated would you judge him to be?  
much education
little education
(much education)

(6) Rate his ability to express his ideas well.  
very good
poor
(very good)

(7) How considerate does he seem to be of the views of other ethnic groups than his own?  
very considerate
inconsiderate
(very considerate)

(8) How just and fair is his answer?  
unfair and unjust
fair and just
(unfair and unjust)

(9) How compassionate is his answer?  
compassionate
uncompassionate
(compassionate)

(10) Overall Quality of answer.  
very poor
Outstanding
(very poor)

Figure 5 Sample of Written Answers
Question: What is your opinion of racial quotas as a policy in admitting minorities to colleges? Why?

(1) How wise is the answer?
   very wise
   very unwise

(2) How much background knowledge does he have on the racial quotas question?
   very much
   very little

(3) How sensitive is the speaker to the racial quotas issue?
   very insensitive
   very sensitive

(4) From what he said, how would you rate his general intellectual ability?
   very high ability
   very low ability

(5) From what he said, how educated would you judge him to be?
   little education
   much education

(6) Rate his ability to express his ideas well.
   very poor
   very good

(7) How considerate does he seem to be of the views of other ethnic groups than his own?
   very considerate
   very inconsiderate

(8) How just and fair is his answer?
   unfair and unjust
   fair and just

(9) How compassionate is his answer?
   uncompassionate
   compassionate

(10) Overall Quality of answer.
    very poor
    outstanding

Figure 6 Response for Spoken Answers
Figure 7 Dialect and Intonation Manipulation (Spontaneous)
Figure 8 Dialect and Intonation Manipulation (Calculated)
Figure 9  Effect of Adding Voice (Spontaneous)
Figure 10  Effect of Adding Voice (Calculated)
The purpose of this study is to assess the effectiveness of placement of students at the English Language Center here at Brigham Young University. The intensive English program began here at BYU seven years ago, yet the organization of the English Language Center is relatively new. The Center began its first semester of operation in September 1980. At that time it was determined that the program would be set up with five levels of instruction. In order to correctly place students on the appropriate level with other students of comparable proficiency, a five-part test battery was developed. This instrument includes a twenty-item oral choice grammar test, two dictation passages, a sixty-item reading comprehension test, and a forty-item listening comprehension test. Placement results are determined by the total score of the five-part test.

Since the initial placement exam in the fall of 1980 many, including myself, have wondered how successful we have been in correctly placing students by proficiency levels. Many have also asked at what level it would be expected that a student would pass the Test of English as a Second Language (TOEFL) or the Michigan Test of English Language Proficiency (MTELP).

Both the TOEFL and the MTELP are measurements used by colleges and universities throughout the United States for determining a student's proficiency in English. One of these tests must be taken prior to being accepted at an American university.

The test of English as a Foreign Language (TOEFL) was developed by a team of over thirty organizations in 1963. Through the years responsibility for the exam has fallen under the direction of many different organizations. Since 1973 Educational Testing Service (ETS) has been responsible for its administration, directed by the TOEFL Committee of Examiners. This committee is comprised of six members who are specialists in linguistics, language testing or the teaching of English as a second language (Test and Score Manual, 5-6). As mentioned, the purpose of the TOEFL is to measure English proficiency of students whose native language is not English. It is used for admission purposes by colleges and universities across the United States, academic institutions in Canada and other countries, as well as independent organizations and foreign governments. It is recommended for use by students at the eleventh-grade level or above; the test content is
considered too difficult for younger students.

TOEFL was originally a two-hundred question test consisting of five sections. The test has been modified considerably through the years to its present form of three sections. Section one, listening comprehension, measures the students' ability to understand spoken English. The test problems deal with aspects of vocabulary, grammatical structures, as well as sound and intonation distinctions that have proven difficult for non-native speakers. Section two measures mastery of important structural and grammatical points in standard written English. Section three tests reading comprehension and vocabulary skills.

Table 1 gives average reliabilities of the scaled scores of the three sections and total test. The reliabilities were computed using the Kuder-Richardson Formula 20. For section one (listening comprehension) the reliability is .88. Section two (structure and written expression) has a reliability of .84. The reliability for section three (reading comprehension and vocabulary) is .89. Finally, the reliability for the total score is .94. The observed reliabilities indicate that the TOEFL yields consistent results.

The TOEFL also has a strong relationship among the skills tested by the three sections of the test. These intercorrelations among section scores are found in Table 2.

Research also indicates that the TOEFL produces valid results; that is, it actually measures what it is intended to measure (Test and Score Manual, 25).

TOEFL has an ongoing research program to maintain additional support of its validity and reliability.

The Michigan Test of English Language Proficiency, like the TOEFL, was designed to measure English proficiency of non-native speakers of English. MTELP is part of a battery of tests which also includes an impromptu written essay on an assigned topic and a test of aural comprehension. At Brigham Young University we do not use the written essay.

The Michigan Test Service is available through the University of Michigan, English Language Institute, Division of Testing and Certification.

The MTELP is a one-hundred item objectively scored test divided into three sections. Section one is a multiple-choice grammar test. Section two deals with vocabulary. The items in this section test words in the range of the 4,000 to 9,000 most common English words according to the Thorndike-Lorge general word count (MTELP Manual, 9). This range was selected as the minimum working vocabulary for a full-time student in an English university, so that he/she would not be handicapped by the need for excessive dictionary work. Common English idioms are also tested in this section. Section three is based on reading comprehension. There are four passages ranging from 100 to 350 words in length followed by
five multiple-choice questions. The questions require a knowledge of facts, an understanding of argument and drawing conclusions (MTELP Manual, 3).

Test results indicate that the MTELP is sufficiently reliable for discriminating among individual students seeking admission to American colleges and universities. The reliability coefficient computed by Kuder-Richardson Formula 20 was .894. Valid results are achieved from the Michigan (MTELP Manual, 14).

With this introduction to the ELC placement exam, the TOEFL and the MTELP it is hypothesized that the ELC exam correlates significantly with these two highly established, normed exams.

Method

Subjects. All adult subjects involved in this study were enrolled at five levels of instruction in the Brigham Young University English Language Center intensive English program. One hundred and five students from eleven different language backgrounds have taken the TOEFL. Of these one hundred and five, five students were from level one, thirty from level two, twenty-four from level three, twenty-eight from level four and nineteen from level five. Forty students from six different language backgrounds have taken the MTELP. Of these forty, one was from level one, one was from level two, nine from level three, twenty-one from level four, and ten from level five. All students taking either the TOEFL or the MTELP range in proficiency from high beginning to advanced.

Measurement. At the beginning of each semester, all students are administered the BYU/ELC Placement Battery. They are then placed by level and section according to their total score on the five-part battery. Two weeks into the semester, all teachers are asked to rate each student according to his/her performance in class up to that point. The purpose of this rating is to check to see if the students are correctly placed. The rating consists of a five-part scale. Normally about fifty percent of a class will receive a rating of three (the middle group); about twenty-five percent will receive a rating of four (the top group); and about twenty-five percent will receive a rating of two (the low group). The ratings of one and five are for misplaced students. The one rating is for those who should have been placed at a lower level. The five rating is for those who should have been placed at a higher level. Most teachers, then, would not assign any rating of one or five. Students are never moved down a level, but at this point if any student does receive a rating of five, he/she would be moved up to the appropriate level.

At the completion of each semester the TOEFL exam is given. The MTELP is given every month. Any student who desires to take the exam may. These exams are not mandatory for ELC students but are offered as a service to those interested in applying for admissions to the
university. Data for this particular study was calculated from test results from November 1980 to December 1981.

Data Analysis. The level averages for both the TOEFL and the MTELP were determined. The Pearson-Product Moment Correlation coefficients were calculated for each exam also. Simple linear calculations were made with an analysis of variance for each exam.

Results and Discussion

The level averages for the TOEFL (Table 3) identify the progressive nature of the levels with greater TOEFL scores. It should be noted that the scores received at each level indicate the completion of a given level. Thus it can be hypothesized that at the completion of level five a student would score, on the average, a 502 on the TOEFL. At the completion of level four, a 463, at level 3 a 455, level 2 a 398 and at level 1 a 392. An international students applying for admissions to Brigham Young University must receive a 500 or higher on the TOEFL to be admitted.

Table 4 identifies the level averages for MTELP. As with the TOEFL scores, these scores indicate a student has completed the assigned level. Thus upon completion of level five a student, on the average, would receive a 78 on the MTELP. Level four, a 71, level 3 a 67, level 2 a 70 and level 1 a 45. Students must receive an 85 or higher to be accepted at Brigham Young University. In informal surveys of students who have taken both the TOEFL and the MTELP, most indicate that the MTELP is easier. Yet results of this study indicate that more students are passing the TOEFL.

From the results of the analysis of variance table (Table 5) for the TOEFL scores we see that a significant correlation (at the .0005 level) was found between the ELC placement levels and students' TOEFL scores. Likewise, there was a significant correlation (also at the .0005 level), although not as high, between the ELC placement levels and MTELP scores (Table 6). Both these findings support the principle hypothesis that there is significant correlation between a student's placement level and results on either the TOEFL or the MTELP.

Conclusion

Results of this study indicate that the BYU/ELC placement exam is accurately placing students for their study of intensive English. Although many students may complain and recommend that they be moved to a higher level, it is apparent that we can have significant confidence in our placement procedures. Likewise we can have significant confidence that at the completion of level five a student will be able to pass the TOEFL.
This type of analysis and correlation will be an ongoing process. After each TOEFL and MTELPEXAM, results will be combined with the present data, thus making the sample size continually larger. This will be a key in helping to determine the successful placement of intensive English students.
Table 1
Reliability of TOEFL

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<th>Section</th>
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<tr>
<td>2. Structure and Written</td>
<td>.84</td>
</tr>
<tr>
<td>3. Reading Comprehension</td>
<td>.89</td>
</tr>
<tr>
<td>and Vocabulary</td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>.94</td>
</tr>
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</table>

Table 2
Intercorrelations of TOEFL Scores

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<th>Section</th>
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<th>2</th>
<th>3</th>
<th>Total</th>
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<td>.37</td>
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<tr>
<td>2. Structure and Written</td>
<td></td>
<td>--</td>
<td>.77</td>
<td>.92</td>
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<tr>
<td>3. Reading Comprehension</td>
<td>.68</td>
<td>.77</td>
<td>--</td>
<td>.91</td>
</tr>
<tr>
<td>and Vocabulary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>.87</td>
<td>.92</td>
<td>.91</td>
<td>--</td>
</tr>
</tbody>
</table>
Table 3
Level Averages for the TOEFL

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>392.07</td>
<td>52.8</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>398.23</td>
<td>33.1</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>455.17</td>
<td>30.2</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>483.35</td>
<td>42.1</td>
</tr>
<tr>
<td>5</td>
<td>19</td>
<td>522.51</td>
<td>34.8</td>
</tr>
</tbody>
</table>

Table 4
Level Averages for the Michigan English Language Proficiency Exam

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>45.00</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>70.00</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>67.371</td>
<td>6.97</td>
</tr>
<tr>
<td>4</td>
<td>21</td>
<td>70.682</td>
<td>7.78</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>77.529</td>
<td>8.56</td>
</tr>
</tbody>
</table>

Table 5
Pearson Product Moment Correlations

ELC levels with TOEFL = .778
ELC levels with Michigan = .547
Table 6
Analysis of Variance Table ELC Levels with TOEFL Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1</td>
<td>215207</td>
<td>215207</td>
<td>157.661</td>
<td>.0005</td>
</tr>
<tr>
<td>Residual</td>
<td>103</td>
<td>141627</td>
<td>1365</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>355834</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7
Analysis of Variance Table ELC Levels with Michigan Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1</td>
<td>1035.87</td>
<td>103.87</td>
<td>16.208</td>
<td>.0005</td>
</tr>
<tr>
<td>Residual</td>
<td>38</td>
<td>2428.39</td>
<td>63.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>3464.26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Before getting into it, I'd like to explain what an intestate succession statute is. It's not a monument that crosses state borders for coronations (interstate succession statute). 'Intestate' means 'without a will and testament'. 'Succession' means 'who gets your goods after you're dead'. And a 'statute' is a rule of law, usually written, not just passed on by the spoken language but actually codified and written down.

My interest in this particular statute comes from my property course in law school. We studied this statute (the full text is in the appendix of this paper) last semester and were assigned problems to solve relative to it. For example, "So-and-so died and these are his living relatives. Who gets what?" Some of my classmates were discouraged and thought the statute was a nonsensical mess.

I've always been intrigued by Benjamin Whorf's conclusion that educated man knows no more about the linguistic forces that bear upon him than the savage knows of gravitational forces (Whorf 1956:251). At the beginning of the semester I had spoken with Dr. John S. Robertson of the BYU Linguistics Department about his kinship model, and so I thought, "Here's a perfect chance to see what's going on in this statute." I wondered if or how the internal structure of the kinship terminology paradigm unconsciously shared by the framers of the statute influenced the internal structure of the statute. So I looked at the model and interpreted the statute in light of the model. I found that the statute and Dr. Robertson's model have a very similar hierarchical structure of kinship relations. So that's what I'm going to point out today: the similar structure. That's the substantive theme of this paper.

There's a procedural theme too. And that is taken from Charles S. Peirce's declaration that the meaning of a sign is its translation into other signs (Peirce '965:4.127). I would add that the more translations of a given sign we look at, the better we are able to get at the meaning of that sign. Sometimes when we say the same thing in different words or look at the same object from different perspectives we see things about it that we were not aware of before. Teachers find that when they give several different explanations ("translations") of essentially a single concept some students find one explanation more lucid or satisfying than others or that the variety of explanations clarifies the concept. Limiting oneself to a single translation of a sign, sometimes insisting that only that one explanation is the correct one, hinders rather than helps communication and learning. As Sapir said, "What fetters the mind and benumbs the spirit is ever the dogged acceptance of absolutes" (Sapir 1949:159). It is often good teaching strategy to devise several different translations of a given concept in order to help the students better understand the concept. I will use that strategy in this paper.
I'm going to take a set of information and transpose it through several translations into different signs and finally compare the sign that is the statute with one of the translations of the logical field of the English kinship terminology.

We're going to be talking about sixteen kinship relations. That's enough to keep us very busy, and the statute doesn't go any farther than that anyway. We will number these sixteen relations '0' through '15' (see figure 1).

FIGURE 1 0, 1, 2, 3, ... 15

Then we convert the decimal numbers (base ten) to binary numbers (base two) (see figure 2).

FIGURE 2 0, 1, 2, 3, ... 15

0000, 0001, 0010, 0011, ... 1111

There are many reasons for converting to binary. Lots of linguists these days think that language tends to have binary qualities. For example, the opposition marked/unmarked seems to be a binary phenomenon. Linguists and physiologists alike talk about binary qualities of the human brain such as the left hemisphere of the cerebrum as opposed to the right hemisphere (cf. Jakobson 1958a). And binary numbers have proven useful in my study with Dr. Robertson especially. He's very much into looking at how to apply the mathematics of binary numbers to linguistic problems. In figure 2 I've converted the decimal numbers to binary numbers. We're going to use four-digit binary numbers.

The next step is to translate this series of numbers into an array, which is a more iconic sign for our purposes than is a series (see figure 3).

FIGURE 3

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

The term 'iconic' used here is opposed to 'symbolic', in the Peircean sense. See Peirce's semiotic trichotomy of icon, index and symbol (Peirce 1965:2,247ff, 2,274ff) and Jakobson's logical extension to icon, index, symbol and artifice (Jakobson 1980b:22ff).
We'll work with the array in binary numbers, as they are better suited to our purposes (see figure 4).

**FIGURE 4**

```
<table>
<thead>
<tr>
<th>0000</th>
<th>0001</th>
<th>0010</th>
<th>0011</th>
</tr>
</thead>
<tbody>
<tr>
<td>0100</td>
<td>0101</td>
<td>0110</td>
<td>0111</td>
</tr>
<tr>
<td>1000</td>
<td>1001</td>
<td>1010</td>
<td>1011</td>
</tr>
<tr>
<td>1100</td>
<td>1101</td>
<td>1110</td>
<td>1111</td>
</tr>
</tbody>
</table>
```

You can see here that the binary numbers are really nice because you can see patterns of repeating numbers. For example, '11' all the way down the right-most column, '10' all the way down the next column to the left, etc. There are also patterns apparent in the horizontal rows. When we get to the kinship relations themselves, these patterns are really useful.

**FIGURE 5**

Figure 5 is a translation of the binary number array of figure 4 into a graphic representation, which perhaps, depending on the observer, is an even more iconic sign than the array of binary numbers. The black squares represent the ones and the white squares the zeroes. The array in figure 5 corresponds point-for-point to that in figure 4.
Figure 5 illustrates another way to communicate the information contained in the binary number array of figure 4. In our upper-division linguistics classes we found that some people were intimidated or pavlovian bored by the binary numbers. They found the graphic representation more interesting. The visual patterns excited their curiosity more than did the binary numbers. They said that the graphic medium made the paradigmatic patterns more readily apparent than did the medium of binary numbers. The use of both these media is another illustration of good teaching strategy.

FIGURE 6

<table>
<thead>
<tr>
<th>SELF</th>
<th>PARENT</th>
<th>G-PARENT</th>
<th>G-G-PARENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>spouse</td>
<td>father</td>
<td>g-father</td>
<td>g-g-father</td>
</tr>
<tr>
<td>husband</td>
<td>mother</td>
<td>g-mother</td>
<td>g-g-mother</td>
</tr>
<tr>
<td>wife</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000</td>
<td>0001</td>
<td>0010</td>
<td>0011</td>
</tr>
<tr>
<td>CHILD</td>
<td>SIBLING</td>
<td>uncle</td>
<td></td>
</tr>
<tr>
<td>son</td>
<td>brother</td>
<td>g-uncle</td>
<td></td>
</tr>
<tr>
<td>daughter</td>
<td>sister</td>
<td>g-aunt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0100</td>
<td>0101</td>
<td>0110</td>
<td>0111</td>
</tr>
<tr>
<td>G-CHILD</td>
<td>CUSIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g-son</td>
<td>nephew</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g-daughter</td>
<td>niece</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>1001</td>
<td>1010</td>
<td>1011</td>
</tr>
<tr>
<td>G-G-CHILD</td>
<td>CUSIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g-g-son</td>
<td>g-nephew</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g-g-daughter</td>
<td>g-niece</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1100</td>
<td>1101</td>
<td>1110</td>
<td>1111</td>
</tr>
</tbody>
</table>

Figure 6 represents the array of the kinship relations. Comparing figure 6 to figure 4, the 'self' square corresponds to the '0000', the 'parent' to the '0001', the 'child' to the '0100', etc. All of the kinship relations are defined with respect to the 'self'. So, the 'parent' is the parent of the self, the 'child' is the child of the self, the 'cousin' is the cousin of the self, etc. The 'self' is the point of reference for the whole paradigm, and in that sense it is a deictic paradigm.

Now I'll explain why the kinship relations are arrayed in the particular order that they are. This is all background for the actual analysis of the statute.
First, a review of the math involved. When we analyze the decimal number '3041' we can talk about the places from right to left as the 'ones place', the 'tens place', the 'hundreds place' and the 'thousands place'. So, the decimal number '3041' means 'one one and four tens and zero hundreds and three thousands' or 'three thousand forty-one'. When we analyze the binary number '0010' we can talk about the places from right to left as the 'ones place', the 'twos place', the 'fours place' and the 'eights place'. So, the binary number '0010' means 'zero ones and one two and zero fours and zero eights' or 'two'. The binary number '1101' means 'one one and zero twos and one four and one eight' or 'thirteen'.

We're using these four-digit binary numbers the way a computer does. A computer stores information by means of binary numbers, ON and OFF switches. So, we're going to do the same thing. '0' means 'OFF' and '1' means 'ON'. We will assign the set of information 'one generation up from the self' to the ones place. In other words, the ones place means 'one generation up from the self' and a '1' in the ones place signals the presence of that information while a '0' in the ones place signals the absence of that information. The set of information 'two generations up from the self' will be assigned to the twos place. Similarly, we assign the fours place the meaning of 'one generation down from the self' and the eights place the meaning of 'two generations down from the self' (see figure 7).

Huntington's Theorem states, "the number of elements in every logical field must be \(2^m\), where \(m = 1, 2, 3, \ldots\)" (Huntington 1904:309). In other words, a logical field has \(2^m\) logical spaces, where \(m\) represents the number of values that define the logical field. In our representation of the logical field of English kinship terminology, there are four values: (1) one generation up from self, (2) two generations up from self, (3) one generation down from self, and (4) two generations down from self. And again, in our binary notation '1' represents the presence of the value and '0' its absence.
Figure 8 shows yet another way to represent (or perceive) the array of kinship relations, namely as a cartesian coordinate system. Here 'self' is the origin, the up-axis points horizontally and the down-axis points vertically. The axes are marked off in units, 1, 2, 3. In terms of our binary numbers, the ones and twos places represent the up-axis and the fours and eights places the down-axis.

Returning now to figure 6, we see that '0000' means 'no generations up or down from self' which means 'self'. In the antit of our intestate succession statute the self is the one who has died. In that case, '0000' represents 'spouse'. In square '0001' there are no down generations and only one up generation, which would be the parents of the self. In square '0100' there are no up generations and just one generation down, which would be the children of the self. In square '0011' we go up one generation to the parents and then down one generation. Down one generation from the self's parents, excluding the already represented self, are the self's brothers and sisters, the siblings. In square '0110' we go up two generations to the grandparents then down one generation, excluding the already represented parent, to the aunts and uncles. That is how this array of kinship relations is developed.

Now, let me point out a few interesting things about this array of relations, and then we'll get to the statute. First of all, looking at the graphic representation of the array (figure 5), this is a very interesting chart in terms of markedness. The '0000' square seems to be unmarked, the '1111' square very marked, and all shades in between. This is interesting if you look now at the names of the kinship relations, i.e. the kinship terms (figure 6). We have the highest number of names for the least marked area, the '0000' square, and the fewest names (none) for the most marked area, the '1111' square. This corresponds to the widely recognized tendency of linguistic systems to avoid the accumulation of marks by making distinctions in an unmarked category that are not made in the corresponding marked category (cf.
An example of this tendency to avoid the accumulation of marks can be seen in the consonantal systems of many languages. In the consonants unmarked for nasality (the non-nasals or oral consonants) the distinction voiced/voiceless appears, creating pairs like b/p, d/t, g/k, whereas no such distinctions are made in the correspondingly marked nasal consonants, m, n, and ñ.

I have not been able to find the name of the kinship relation that fits into square '1111'. This tendency can also be seen in the quite marked '1010' and '1011' squares. People are very unsure what to call these guys. Webster's Third International Dictionary (unabridged) says that the terms 'second cousin', 'cousin once removed' and even 'cousin twice removed' are used confusedly and even interchangeably.

This confusion makes sense, considering how marked these kinship relations are. No one makes mistakes about the much less marked brothers and sisters and sons and daughters are. Those are pretty clear.

Another interesting thing in terms of markedness is that linguistic gender distinctions are found in the names for the less marked kinship relations and are not found in the names for the four most highly marked relations, squares '1010', '1011', '1110' and '1111'. Gender distinctions can be made in these more marked areas only by the use of iconic constructions like 'boy-cousin'/ 'girl-cousin', as opposed to the symbolic distinctions 'son'/ 'daughter', 'nephew'/ 'niece', etc.

Now the interesting thing about this markedness stuff is that the intestate succession statute favors the less marked relatives of the deceased. The civil law of succession by kinship relations has the same markedness orientation as the linguistic law of the logical field of English kinship terminology. If the spouse is alive, she collects over all other relatives except direct lineal descendants of the self. It's really hard for the guy represented by square '1111' to get anything when the self dies without a will. '1111' can get stuff if the self wills it to him. But the law favors the less marked spouse so much that in many states the self cannot set up his will so that the spouse gets nothing. (The "of course not!" response of many of us to this proposition reveals our unconscious values that we share with each other and with the law.) If the self writes a will directing that the wife get nothing, the law will step in after he dies and say, "This will is invalid. The spouse gets X% of the self's stuff. After she gets her cut, then the other (more marked) relatives can share what's left."

For the purposes of interpreting the intestate succession statute, the array of kinship relations (figure 6) represents the surviving relatives of the deceased self. The '0000' square represents the 'spouse' of the self. For ease in reference, we will number the array's columns from left to right, 1, 2, 3, 4.

Let's take a look at our statute (full text in appendix). Starting at 2-1(a), it says

If there is a surviving spouse AND also a descendant of the decedent: one-third of the entire estate to the surviving spouse and two-thirds to (be divided equally among) the decedent's descendants per stirpes.
This means that if there is a spouse in the '0000' square AND anybody else in column 1, the spouse gets 1/3 and the rest is divided equally among whoever else is in that column. So if there's only one child as the only other person in column 1, he would get 2/3 and his mother 1/3. If there were four children, they would each get 1/6 and the mother 1/3.

In 2-1(b),

If there is NO surviving spouse but (there is) a descendant of the decedent: the entire estate to the decedent's descendants per stirpes.

When there is no spouse, all the goods are divided equally among those in column 1. As long as there are descendants in column 1, nobody in the other three columns gets anything. So the law prefers column 1 above the rest and creates a special relation between '0000' and the rest of column 1.

In 2-1(c),

If there is a surviving spouse but NO descendant of the decedent: the entire estate to the surviving spouse.

So, if there is a spouse but no descendants, she gets it all. She doesn't share with the relatives in the other three columns.

FIGURE 9

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>0010</td>
<td>0011</td>
</tr>
<tr>
<td>0101</td>
<td>0110</td>
<td>0111</td>
</tr>
<tr>
<td>1011</td>
<td>1101</td>
<td>1111</td>
</tr>
</tbody>
</table>

In 2-1(d), (see figure 9),

If there is no surviving spouse or descendant but a parent, brother, sister, or descendant of a brother or sister of the decedent:

Now all of column 1 is empty, but there is someone in column 2. What now? 12.8
2-1(d) continues

the entire estate to the parents, brothers and sisters of the decedent in equal parts, allowing to the surviving parent, if one is dead, a double portion and to the descendants of a deceased brother or sister per stirpes the portion which the deceased brother or sister would have taken if living.

So, under 2-1(d), when column 1 is completely empty and there is someone in column 2, the following rules apply:

a. Parents and siblings divide everything equally. So if there are two parents and two siblings, each gets ¼ of the goods.

b. If there is only one parent living, the estate is apportioned as if both parents were alive, and the surviving parent gets the shares for both parents. So if there were one parent and two siblings, the parent would get ½ and each sibling would get ¼ of the estate.

c. If one or more of the siblings has died and left children, his children (not the sibling's spouse) divide up his share.

Of course, if there are no parents in column 2, the siblings equally share all.

FIGURE 10

In 2-1(e) column 2 is completely empty, as well as column 1 (see figure 10). In that case the goods are divided up as follows:

The estate is divided in half and ½ goes to the paternal grandparents ('0010') and the other ½ to the maternal grandparents ('0010').

If the grandparents are dead, their descendants in column 3 share the grandparents' portion equally. If there is no one at all in the paternal column 3, then the entire estate goes to the maternal column 3, and vice versa. Note that there is no "double portion" provision for
the more marked grandparents like there was for the less marked parents. There is no "double portion" provision for the great-grandparents either.

FIGURE 11

<table>
<thead>
<tr>
<th></th>
<th>PAINT</th>
<th>G-G-PARENT</th>
<th>G-G-G-PARENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPOUSE</td>
<td>FATHER</td>
<td>g-g-father</td>
<td>g-g-g-father</td>
</tr>
<tr>
<td>HUSBAND</td>
<td>MOTHER</td>
<td>g-g-mother</td>
<td></td>
</tr>
<tr>
<td>WIFE</td>
<td></td>
<td></td>
<td>011</td>
</tr>
<tr>
<td>CHILD</td>
<td>SIBLING</td>
<td>UNCLE</td>
<td>SECONDD COUSIN</td>
</tr>
<tr>
<td></td>
<td>BROTHER</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SISTER</td>
<td>AUNT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>011</td>
</tr>
<tr>
<td>G-CHILD</td>
<td>SIBLING</td>
<td>COUSIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIECE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nephew</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>011</td>
</tr>
<tr>
<td>G-CHILD</td>
<td>g-aunt</td>
<td>COUSIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>g-uncle</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>011</td>
</tr>
<tr>
<td>G-CHILD</td>
<td>g-niece</td>
<td>COUSIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>g- nephew</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>011</td>
</tr>
</tbody>
</table>

In 2-1(f) there is no one at all in the first three columns (see figure 11). In that case ½ of the estate goes to the paternal '0011's and ½ to the maternal '0011's, to be divided equally among their descendants in the likely event that the '0011's themselves are dead. Again, if there is no one in the paternal columns 4, the entire estate goes to the maternal columns 4, and vice versa.

2-1(g) says that if there is no one alive who would fit into the kinship relations array of figure 6, the estate is divided up equally among any living relatives that can be found.

2-1(h) says that if the law can find no living relative of the self, the state will take the estate. This is called 'escheating'.

So we see that the law proceeds through the array by columns, that is it proceeds through the kinship relations by giving priority to descent. Why doesn't the law proceed through the array by horizontal rows? That is, why doesn't the law operate by giving priority by ascent or lateral relation rather than descent? I don't know answers to these questions. There may be linguistic, cultural, or even (perish the thought!) innate reasons for it. There may be societies in which their law does give priority to ascent and the statute proceeds through the array by horizontal rows. That would be a topic for another paper.
Another question is, What happens when a language does not make distinctions that are made in English? For example, in Italian the word 'nipote' is used to refer to grandchild, grandson, granddaughter, nephew and niece, and there are no separate words for those relations. I understand that other languages do not make other distinctions made in English. How does this affect their laws of intestate succession, assuming they have such a thing in opposition to succession by will? That too is a topic for another study.

Another interesting study would be to trace this 1975 Illinois statute back in time and space to New England and then further back to England itself to see how faithfully the statute has been transmitted, or if it is different to see if there are parallel differences in the linguistic structure of the kinship terminology.

So, this study has shown two things. First, the statute has a simple and orderly internal structure consisting of a couple of simple operations repeated again and again. Second, the favoritism or preference of the law for certain relatives over others parallels the linguistic unmarkedness of the terms for certain kinship relations as opposed to the markedness of others. This may be an illustration of Whorf's ideas about linguistic influence on our habitual thought. It certainly seems to confirm his observation that we are relatively unaware of the linguistic forces that bear on us.

BIBLIOGRAPHY


APPENDIX

The following statute is copied from Cribbet & Johnson 1978:245-246.

DESCENT AND DISTRIBUTION
Illinois Revised Statutes, Chapter 3 (1973).

§ 2-1. Rules of descent and distribution

The intestate real and personal estate of a resident decedent and the intestate real estate in this state of a non-resident decedent after all just claims against his estate are fully paid, descends and shall be distributed as follows:

(a) If there is a surviving spouse and also a descendant of the decedent: one-third of the entire estate to the surviving spouse and two-thirds to the decedent's descendants per stirpes.

(b) If there is no surviving spouse but a descendant of the decedent: the entire estate to the decedent's descendants per stirpes.

(c) If there is a surviving spouse but no descendant of the decedent: the entire estate to the surviving spouse.

(d) If there is no surviving spouse or descendant but a parent, brother, sister, or descendant of a brother or sister of the decedent: the entire estate to the parents, brothers and sisters of the decedent in equal parts, allowing to the surviving parent, if one is dead, a double portion and to the descendants of a deceased brother or sister per stirpes the portion which the deceased brother or sister would have taken if living.

(e) If there is no surviving spouse, descendant, parent, brother, sister, or descendant of a brother or sister of the decedent, but a grandparent or descendant of a grandparent of the decedent: (1) one-half of the entire estate to the decedent's maternal grandparents in equal parts or to the survivor of them, or if there is none surviving, to their descendants per stirpes, and (2) one-half of the entire estate to the decedent's paternal grandparents in equal parts or to the survivor of them, or if there is none surviving, to their descendants per stirpes. If there is no surviving paternal grandparent or descendant of a paternal grandparent, but a maternal grandparent or descendant of a maternal grandparent of the decedent: the entire estate to the decedent's maternal grandparents in equal parts or to the survivor of them, or if there is none surviving, to their descendants per stirpes.

(f) If there is no surviving spouse, descendant, parent, brother, sister, descendant of a brother or sister or grandparent or descendant of a grandparent of the decedent: (1) one-half of the entire estate to the decedent's maternal great-grandparents in equal parts or to the survivor of them, or if there is none surviving, to their descendants per stirpes, and (2) one-half of the entire estate to the decedent's paternal great-grandparents in equal parts or to the survivor of them, or if there is none surviving, to their descendants per stirpes. If there is no surviving paternal great-grandparent or descendant of a paternal great-grandparent, but a maternal great-grandparent or descendant of a maternal great-grandparent of the decedent: the entire estate to the decedent's maternal great-grandparents in equal parts or to the survivor of them, or if there is none surviving, to their descendants per stirpes. If there is no surviving maternal great-grandparent or descendant of a maternal great-grandparent, but a paternal great-grandparent or descendant of a paternal great-grandparent of the decedent: the entire estate to the decedent's paternal great-grandparents in equal parts or to the survivor of them, or if there is none surviving, to their descendants per stirpes.
(g) If there is no surviving spouse, descendant, parent, brother, sister, descendant of a brother or sister, grandparent, descendant of a grandparent, great-grandparent, or descendant of a great-grandparent of the decedent: the entire estate in equal parts to the nearest kindred of the decedent in equal degree (computing by the rules of the civil law) and without representation.

(h) If there is no surviving spouse and no known kindred of the decedent: the real estate escheats to the county in which it is located; the personal estate physically located within this state and the personal estate physically located or held outside this state which is the subject of ancillary administration of an estate being administered within this state escheats to the county of which the decedent was a resident or, if the decedent was not a resident of this state, to the county in which it is located; all other personal property of the decedent of every class and character, wherever situate, or the proceeds there-of, shall escheat to this state and be delivered to the Director of Financial Institutions of the State of Illinois pursuant to the provisions of the "Uniform Disposition of Unclaimed Property Act".

In no case is there any distinction between the kindred of the whole and the half blood.
A PRELIMINARY DISTINCTIVE FEATURE ANALYSIS FOR
UPPER-CASE, ROMAN, HANDWRITTEN CHARACTER RECOGNITION

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1. INTRODUCTION

Character recognition, whether by man or machine, is a subset of the general field of pattern recognition. The term "pattern" has been defined in various ways in the literature. We examine here only a few of those definitions: Jackson states that "a pattern is a collection of objects, each of which has the property that it satisfies a certain criterion, known as the pattern rule for the pattern. The objects in a pattern are said to be pattern examples."6 Tou simply describes a pattern as "the description of an object." As human beings we are performing pattern recognition every moment of our waking lives. The mind, through the eye, recognizes not only individual shapes and forms but classifies objects into larger categories such as humans, animals, trees, and so forth. In a similar manner, we classify sounds as linguistically meaningful or as noise or as music, etc. Again quoting Tou: "Thus, the problem of pattern recognition may be regarded as one of discriminating the input data, not between individual patterns but between populations, via the search for features or invariant attributes among members of a population." He goes on to explain that the study of pattern recognition problems is broken down into two major categories:

"1. The study of the pattern recognition capability of human beings and other living organisms.

"2. The development of theory and techniques for the design of devices capable of performing a given recognition task for a specific application."

The linguist is primarily concerned with the first of these categories; whereas the computer scientist allocates his time to the study of the second category. It is the desire of the author to merge these two viewpoints in an attempt to create a computer system for machine recognition of upper-case, Roman, handwritten characters.

One object of this paper is to probe the psychological foundation of feature selection for machine recognition of characters, and - in particular - upper-case, Roman, handwritten characters. There are numerous approaches to the problem of machine character recognition found not only in the literature but also in the marketplace. For example, the banking industry utilizes a special numerical font which is
standardized for machine reading of the pertinent data on your individualized checks. Other systems, which are readily available in the marketplace, are trained to recognize certain type fonts and are, therefore, very useful for typed data input. Many schools and universities provide computer registration that incorporates machine recognition of hand-entered registration forms. Some character recognition systems demand that the user conform to a specific printing style. In such systems the USER must be trained to perform according to the machine specifications. Other character recognition systems allow the user to train the MACHINE on the user's own personal writing style. Such machines are more versatile; yet they demand greater sophistication in the software, greatly increasing the cost of the system. Yet all of these systems are plagued with the inability to recognize, without training, an arbitrary individual writing style. This is the case for lack of a psychologically based distinctive feature analysis of human character recognition, its imitation, and implementation on a computer-based system. The human can recognize, WITHOUT prior training, the written text of an arbitrary individual. This fact alone should suggest the psychological feature invariants of the orthographic sign system that we use. By discovering these invariants we should be able to simulate human recognition on a computer-based system.

It is the intent of this paper to place machine character recognition on a solid linguistic foundation. It is the feeling of the author that such an approach, combined with the pattern recognition techniques of computer science, will bring us much closer to the day when optical character recognition becomes an inexpensive and vital part of our environment.

2. SEMIOTICS

The purpose of language is to communicate information. This is accomplished through a system of signs, be they verbal, written, or in some other form (such as American Sign Language used by the deaf). Semiotics is the science that pertains to the study of the linguistic sign. The Prague school is generally credited with the pursuit and development of semiotics. Among those most noted for its establishment as an essential part of linguistic study is Roman Jakobson. An attempt will not be made here to cover this field in depth; however, an introduction to the basic terms and concepts of semiotics will be put forth as a foundation whereon we may perform a viable distinctive feature analysis of upper-case, Roman characters.

2.1 Features

Tou states that "pattern recognition can be defined as the categorization of input data into identifiable classes via
the extraction of significant features or attributes of the data from a background of irrelevant detail." Thus, features are attributes or characteristics of an object that may be useful in classifying it. We say that a feature is distinctive, or that we have a distinctive feature, if it is psychologically necessary in the pattern classification performed by man. Thus, for example, we distinguish the difference between /p/ and /b/ through the distinctive feature VOICING. Features may be either concrete or abstract. We may distinguish objects by their color, shape, physical state, etc. We even group abstract notions such as love, hate, addition, subtraction by characteristic features.

There is much psychological evidence indicating that man utilizes binary features in his pattern recognition processes. A binary feature is one that can be represented by two values (+,-) depicting its presence or absence in the pattern being classified. In the above phonemic example, /b/ has the feature [+VOICE] whereas /p/ has the feature [-VOICE]. If a feature is required for proper identification of an object, we say that the feature is "marked". That is, it is marked if either the presence or absence of the feature must be indicated for the object's proper identification. If the feature may or may not be present (i.e., nothing is said about it in the classification scheme), then we say that that feature is "unmarked" for the classification under consideration.

Features may be of two kinds: (1) sense determinative, or (2) sense discriminative. Sense determinative features determine the sense of or the semantic content of the sign in question. Semantic distinctive features such as those of Van Schooneveld or of the author are sense determinative. That is, their presence within the sign contributes to the semantic content or meaning of the sign. Sense discriminative features do not contribute to the meaning of the sign, their meaning being simply "mere otherness". They are used only to distinguish one sign from another. For example, the feature VOICING is used to distinguish /p/ from /b/, but in no way does it attribute a sense or meaning to either of these phonemes. It will be shown within this paper that a feature analysis of orthographic characters will yield a set of sense discriminative features, strikingly analogous to a phonemic analysis of spoken language.

2.2 The Structure of the Linguistic Sign

The linguistic sign, or "signum", consists of two inseparable components: (1) the "signans" which is the "name", or form, by which the sign is identified, and (2) the "signatum" which is the "value", or meaning, of the sign. It is important to recognize the inseparability of the signans and the signatum. Thus, whenever a specific sign is referenced, its semantic content is likewise utilized in constructing the information.
being conveyed. This inseparableness of the sign's duality implies a constancy of meaning, or semantic invariance of the sign IRRESPECTIVE of its environment.

Without going into detail or even being complete, we can illustrate the notion of invariance by examining the signatum of the preposition "to". One of the striking features of this preposition is its implicit deixis. Thus, "A... to B" indicates that to find A, one must look to B as an index. There is also implied a certain involvement or dependency between A and B. It is thus that we understand the difference between "John threw the ball at me." vs "John threw the ball to me." We say, then, that the preposition "to" has a signatum marked with the semantic features DEIXIS and INVOLVEMENT. These can be illustrated in the following:

1. "John drove to the city." The deixis is clear in this example. Involvement is evident in that the "city" is the DESIRED destination of the subject, ostensibly to carry out some action that involves being in or at the "city".

2. "John wants to play." The action desired is found through the deixis of "to". That is, the movement implied by "play" is desired by the agent of the expression. There is a deictic time motion (as opposed to the special motion of the previous example) showing the agent directed toward the desired object (or goal). "To" is used to show the involvement of the agent with the desired action.

The signatum, then, can be characterized by a set (or bundle) of distinctive features. This is common practice in specifying phonemic values. These features characterize the invariant of the linguistic sign irrespective of its environment. This invariance allows us to develop new words within our language. Without invariance, we would not be able to communicate unless each separate utterance within the language were assigned a meaning in some ad hoc manner. This is obviously not the case; we do communicate, and do so through the semantic invariance of the signs we draw upon.

3. THE FEATURE DOMAIN

3.1 Where are the Features to be Found?

We now turn our attention to the orthographic characters under consideration. In the quest for meaningful visual distinctive features, one must ask the question: Where are the features to be found? The retina of the eye consists of numerous quantized receptors. Similarly, an optical scan of a visual scene is presented to the computer in a like manner, through pixels, or quantized visual elements. Thus, the primary data provided to the brain through the eye or to a
computer through an optical scanner is a set of quantized intensity values. For the purposes of this discussion, we may consider each pixel as having only two values: either "on" or "off". We shall also ignore color, since it does not affect the perception of characters, except for its possible "prosodic" content. Thus, our receptor space - that space in which the original data is sensed and recorded - consists of a two-dimensional array of bits, each of which is in one of two states. But is this the space in which the visual distinctive features are to be found? We answer this question with a definite NO. They are not to be found in such a space any more than acoustic distinctive features are found in the time domain of a digitized voice signal. Even though the primary data is supplied to the brain as an array of pixels, the human mind does not "see" dots. What then does it see? The distinctive features are psychological phenomena and must be treated as such.

3.2 The Psychology of Visual Character Recognition

Some time ago the author took his older children on a hike through Timpanogous Cave located in Utah. Among the many peculiar characteristics of this cave are its varied stalactite and stalagmite formations. As the guide pointed out to us some of the more interesting formations, my children would often be heard to remark: "Daddy, that looks like such and such." where "such and such" might be a face, the shape of a bear, etc. In these instances the visual signal would suggest object shapes with which the children were very familiar. How often have we sought among the stars on a clear night the Big Dipper or some mythical character? This capacity to transform a set of "dots" into an abstract pattern is unique to man. Human character recognition utilizes this same process. What the eye sees suggests abstract structures whose relationships with each other form the features by which one character is distinguished from another. As a first attempt to discover the features that the human mind uses in character recognition of Roman orthography, we will posit three abstract structures that are "seen" or suggested by the pattern of dots in the receptor space. The primary distinguishing characteristic between these three structures is their "dimensionality". Thus, we distinguish between "straight" lines vs. "curved" surfaces, the former being one dimensional and the latter being two dimensional. It must be emphasized that these are abstract notions and not related to the physical world. Thus, the pattern of dots representing a "straight" line may not be found in a straight pattern in the receptor space; they may even possess a discontinuity. However, they will suggest to the mind the notion of a straight line. This is a crucial point and the base upon which human psychological perception is founded. The "curved" surface structure, possessing a two dimensional attribute, may be further characterized by the oppositons "closed" vs. "open". The notion of "within" or "inside of"
is perceived in connection with curved surfaces. Thus, with a closed surface, such as "O", one perceives an absolute boundedness or containment within the structure. On the other hand, an open surface, such as a "U" or a "C" elicits a perception of the opposition of containment, namely a freedom to enter or leave the surface at will. Thus, we have three basic structural segments that are characterized by the maximal oppositions: (1) one dimension vs. two dimensions, and (2) open (free) vs. closed (contained). The desired features, then, will be found in the topological relationships in this segment space. There is certainly a precedent set for this possibility in the acoustic realm. The human performs an effective Fourier transformation of the acoustic signal that it receives from a time domain receptor space to a frequency domain feature space. It is mapped data within this frequency domain that the hair cells of the basilar membrane quantize for feature generation. The acoustic distinctive features are then found as topological relationships within this frequency space, i.e., relationships among formant structures.

But one might ask: Can not many characters be created from a single continuous line? How can features be derived from a single line? In answer to this query, one must remember that it is not the physical continuity of a line that we are interested in. Rather, it is the PSYCHOLOGICAL continuity or discontinuity that is sought for. It is the psychological segmentation that occurs within the mind that generates the topology necessary for feature extraction. Therefore, to approach the level of human character recognition through a machine, we must first map the receptor space onto the abstract segment space perceived by the human mind. Creating such a machine is the crux and pivotal point of the entire recognition problem.

4. THE "GRAHEME"

The term "grapheme" has been used in the literature to designate an orthographic character, the supposed smallest unit in the perceptual process. We will show below that a character is not the smallest perceptual unit in the human recognition system. The more basic units, of which the character is composed, we shall term "graphemes". Henceforth, then, we shall depart from the customary usage of the word "grapheme", using it to reference a structural component of a character instead. These structural components, or graphemes, consist of single segments or segment pairs, where the segments are those described in the previous section. A single segment may belong to two graphemes. For example, the two line segments in the letter "T" form a grapheme by virtue of their topological relationship with each other. A character composed of four segments, on the other hand, might consist of six graphemes, since four segments taken two at a time results in six possible pairs. This is the case with the
letter "E", the mutual relationship of each pair of line segments forming separate graphemes. Each grapheme is a linguistic sign. The signans of this sign consists of the form that the grapheme takes and the signatum consists of the distinctive features that identify the grapheme as unique from other graphemes.

As a spoken word consists of a set of phonemes, so the written character consists of a set of graphemes. There is one major difference in this analogy. The phonemes are ordered sequentially in time and are perceived according to this sequential relationship. However, the graphemes within a character constitute an unordered set and are perceived simultaneously, without regard to time sequencing.

4.2 Types of Graphemes

As phonemes are classified into groups such as vowels, stops, and fricatives, graphemes are similarly classified according to the segments from which they are formed. Since we are dealing with three basic segments, we have nine possible grapheme types as follows:

1. "I" graphemes - line alone
2. "C" graphemes - open curve alone
3. "O" graphemes - closed curve alone
4. "X" graphemes - line with line
5. "S" graphemes - open curve with open curve
6. "8" graphemes - closed curve with closed curve
7. "P" graphemes - line with open curve
8. "Q" graphemes - line with closed curve
9. "g" graphemes - open curve with closed curve

The name of the grapheme type is meant to be iconic, suggesting the segment pairs that form the grapheme. Each of these classifications consists of a set of individual graphemes which are characterized by topological distinctive features. The feature distinctions between single segment graphemes are those of dimensionality and the open/closed opposition, whereas those between the segments of a pair grapheme are relational features. It is these distinctive features that form the sense discriminative network for the character recognition of man. We shall describe the feature distinctions in the pair graphemes below. Since the "8" and the "g" graphemes are not represented in the upper-case, Roman characters, we shall omit them from our descriptions. It is also unnecessary to discuss further the structure of single segment graphemes. Table 3 at the end of this section contains a summary of the graphemic character representations.

4.3 The "X" Graphemes

The X-graphemes are relationships between pairs of straight
lines. The first notable feature that one encounters when examining these graphemes is the opposition intersection/no-intersection. To determine the intersection feature, we bound or enclose the character by the smallest possible rectangular box. We then extend the line segments under question in both directions until they meet the box boundaries on both ends of each segment. A pair of line segments composing a grapheme are then said to intersect if their extended representations intersect within the character bounding box; otherwise they do not intersect.

For graphemes that intersect, the place of intersection on each line segment becomes the next distinctive feature. The intersection point is either at the end of the line or in the center of the line. If the intersection point of the extended line is beyond the end-point of the original line segment, we say that the intersection is at the end of the line. The region of the original line that can be considered as the "center" of the line for classifying the intersection as at the "center" must yet be determined by statistical studies of actual handwritten character samples.

Fig. 1: The decision tree for X-grapheme feature selection

Those X-graphemes that are labeled as non-intersecting may yet be distinguished by a connectivity feature. That is, they are either disjoint (unconnected) or they are connected.
by means of a single segment. If they are thus connected, we classify this connection into three areas: (1) the adjacent ends are connected, (2) the centers are connected, or (3) the opposite (diagonal) ends are connected. Fig. 1 illustrates the feature options as a decision tree for X-graphemes. It will be noted from Fig. 1 that there are eight possible

TABLE 1

SAMPLE X-GRAPHEME REPRESENTATIONS

I(a) = line "a", I(b) = line "b", Int = Intersect

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<th>Segment #</th>
<th>Connectivity</th>
<th>Grapheme Notation</th>
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<td>I(a)</td>
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X-graphemes. Thus, three bits are sufficient to represent these possibilities. Table 1 illustrates these graphemes with some specific examples. It will be noted that the
graphemic composition for the letter "A" as shown in Table 1 may have one of two possible graphemes as the relationship between segments 1 and 2. This does not mean that there is a variability in the compositional invariant of the letter A. Such would be a contradiction in terms. Rather, the feature "intersection/no-intersection" is not marked in the feature specification for the grapheme. That is, nothing is said concerning its value. Therefore, it may be either 0 or 1. This allows for individual variations in the letter such as would be found among \( A, \bar{A}, \text{ and } \overline{A} \).

4.4 The "S" Graphemes

The S-graphemes are relationships between pairs of open curves. Although several topological relationships can be created between such pairs, only two of these relationships are found in the upper-case, Roman characters. Thus, we restrict our classification of these graphemes to a single distinctive feature which we term "uni-directional". The letter "B" possesses this feature with the value 1. That is, the open curves - taken as "arrows" - point in the same direction. If they pointed in opposite directions, the feature value would be 0, as is found in the letter "S".

4.5 The "P" Graphemes

The P-graphemes are relationships between segment pairs consisting of a line and an open curve. We always treat the line segment as the first segment in this relationship. Using the methodology of minimal pair comparisons, we find four distinctive features that characterize this class of graphemes. The first feature embodies the oppositions extended(1) vs. compacted(0). The pair relationship is extended if the two segments are connected "in line" with each other, whereas they are compacted if they are "side-by-side". These relationships may be illustrated as follows:

\[
\begin{align*}
J & \quad \text{and} \quad P \\
\uparrow & \quad \text{are extended;} \\
\downarrow & \quad \text{are compacted.}
\end{align*}
\]

The next evident feature that arises out of our comparisons is designated through the oppositions parallel(1) vs. perpendicular(0). If the segments are "parallel", then the line segment is parallel to the tangent of the open curve at the point of connection. Similarly, the segments are "perpendicular" if the line segment is perpendicular to this same tangent at the connection point. These are illustrated in the following:

\[
\begin{align*}
J & \quad \text{and} \quad \Upsilon \\
\uparrow & \quad \text{are parallel;} \\
\overline{P} & \quad \text{and} \quad \overline{P} \quad \text{are perpendicular.}
\end{align*}
\]

13.10
The last feature, applied to each segment individually, relates the general size of the segment to the size of the boxed character. Thus, for example, the open curve in the letter "D" is designated as "whole size"(I) whereas the same open curve in the letter "P" is designated as "half size"(O). Table 2 illustrates these features with examples of upper-case characters.

### TABLE 2

**SAMPLE P-GRAPHHEME REPRESENTATIONS**

\( I(a) = \) line "a"  \( C(b) = \) open curve "b"

<table>
<thead>
<tr>
<th>Segment #</th>
<th>Extended(I)</th>
<th>Parallel(I)</th>
<th>Whole size(I)</th>
<th>Grapheme Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extended(0)</td>
<td>Parallel(0)</td>
<td>Half size(0)</td>
<td></td>
</tr>
<tr>
<td>I(a) C(b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B4 {1 1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>P(1,2:2)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>P(1,3:2)</td>
</tr>
<tr>
<td>D4 {1 1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>P(1,2:3)</td>
</tr>
<tr>
<td>P4 {1 1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>P(1,2:2)</td>
</tr>
<tr>
<td>J4 {1 1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>P(1,2:12)</td>
</tr>
<tr>
<td>G4 {1 1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>P(1,2:1)</td>
</tr>
</tbody>
</table>

### TABLE 3

**GRAPHEMIC REPRESENTATION OF UPPER-CASE ROMAN CHARACTERS**

\( \text{X}(1,2:3) \)

\( \text{A}^1 : X(1,2:7), X(1,3:5), X(2,3:5) \)

\( \text{B}^1 : P(1,2:2), P(1,3:2), S(2,3:1) \)

\( \text{C} : C \)

\( \text{D}^2 : P(1,2:3) \)

\( \text{E}^1 : X(1,2:7), X(1,3:5), X(1,4:7), X(2,3:0), X(3,4:0), X(2,4:0) \)

\( \text{F}^2 : X(1,2:7), X(1,3:5), X(2,3:0) \)

\( \text{G}^1 : P(1,2:1) \)

\( \text{H}^2 : X(1,2:2) \)
4.6 The "Q" Graphemes

The Q-graphemes are used to distinguish relationships between a line and a closed curve. There is only one basic distinctive feature that need be considered with these graphemes. It is analogous to the parallel/perpendicular oppositions of the P-graphemes and is referenced by the oppositions tangent(1)/perpendicular(0). The segments are tangent if the line coincides with the tangent to the closed curve at the point of connection. On the other hand, they are perpendicular if the line intersects the closed curve such that it is perpendicular to the tangent of the curve at the point of intersection. There is only one letter in the upper-case
characters that contains this grapheme, namely, the letter "Q". Its graphemic notation is simply $Q(1,2:0)$, where the first segment of the pair is the line.

5. THE GRAPHIC SYLLABLE

We have developed a graphemic theory of character perception much along the lines of phonemic theory of verbal perception. One might naturally ask at this stage whether or not the analogical relationship with phonology can be carried to a greater extent. More specifically, we might ask questions such as: Is there a graphic "syllable"? In phonology we treat the syllable as a structural unit above that of the phoneme. The syllable is a psychological reality wherein the mind automatically creates a "natural" segmentation of the verbal signal. That is, we impose a structural hierarchy upon the signal that we hear. A given discourse is treated as a set of sentences, which are composed of phrases, which - in turn - are composed of words, which are then built up of syllables, which finally are structured from phonemes. This, obviously, is a simplified view of language perception; but it serves to illustrate the function of psychologically imposed structure in the communicative process. Is there, then, a comparable "graphic" syllable? There is evidence in the languages of man that would demand an affirmative answer to this question. The pictographic nature of Chinese is an illustration of this phenomenon. The Chinese character is recognized - not as an arbitrary set of lines with peculiar relationships - but as consisting of structural components, the core of which is known as a "radical". There are 214 radicals, or primitive structural units, that are used in building some 15,000 Chinese characters. These radicals may be looked upon as constituting graphic syllables. Entire Chinese dictionaries are developed around the order of complexity of the governing radical within the character.

Turning our attention to the Roman alphabet, we see evidences of a similar psychological hierarchy in the structure of the upper-case characters. For example, if one were to separate the letter "A" into two constituents, which of the following possibilities would seem most "natural"?

1. / \ 
2. \ / 
3. \ - 

If the reader selected option (3), he will not find himself alone. There seems to be a natural division of the letter "A" according to this pattern. Then, could one not suggest that the letter "A" consists of two graphic "syllables", namely "\" and "-"? Carrying this a step further, could not the featural invariant of the letter "A" be dependent
upon the relationship between these two syllables? This being the case, a free variation of the syllable "\" (e.g., realizations such as "\" and "\") would not affect the featural invariant between this syllable and its counterpart "—". The above inquiries are meant simply to stimulate thinking along the lines of a psychologically imposed syllabic structure in the character recognition processes of man. However, this phenomenon has not been taken into account in the preliminary computer implementation of the recognition system described in this paper.

6. ORIENTATIONAL FEATURES

The reader may have noticed in Table 3 that some characters have identical graphemic representations. Thus, we are forced to conclude the existence of other featural entities that allow man to uniquely distinguish one character from another. We have treated in the graphemic analysis only those relationships between the three basic segment types, irrespective of the observer. For example, the letter "b" is identical to the letter "d", which is also identical to the letter "P" from a graphemic point of view. We find, however, that the "point of view" of the observer plays an important role in character recognition. Hence, we may conclude that characters are further distinguished by orientational distinctive features. These features operate upon the character as a whole and not upon individual graphemes of which the character is constructed. The application of such features is illustrated by the following examples:

1. "L" rotated 45 degrees yields "V".
2. "N" rotated 90 degrees yields "Z".
3. "M" rotated 180 degrees yields "W".

Other examples, outside of the upper-case set, will be noted in the next section of this paper. There appear to be eight possible orientations for a given letter demanding three bits, or orientational distinctive features, to accommodate all possible permutations of the observer's point of view.

These observations suffice for rotational features, but they do not include a parity feature. We can not obtain the letter "d" from the letter "b" by rotation, and yet they have the same graphemic description. It is therefore necessary to posit a parity feature. Even though it is not needed for upper-case characters, this feature is requisite to complete the set of orientational distinctive features used by man.
7. PERMUTING THE FEATURES BEYOND UPPER-CASE ROMAN CHARACTERS

If the distinctive features discussed in this paper are truly representative of the psychological featural analysis performed subconsciously by man in character recognition, then permutations of these features, not found in the upper-case characters, should result in "characters" that are recognized by related alphabets (i.e. those that are diachronically related, possessing, subsequently, a similar or identical feature structure) or that would appear to be "natural" additions to our own alphabet if required. Many of these "new" characters will be found in the lower-case, Roman character set as well as the Greek and Russian alphabets. Several such characters are also found as "invented" symbols in mathematics as well as the various sciences. Table 4 illustrates a few of these.

TABLE 4
SAMPLE (NON UPPER-CASE ROMAN) CHARACTERS POSSESSING GRAPHEMIC AND ORIENTATIONAL FEATURES

<table>
<thead>
<tr>
<th>Lower-case Roman</th>
<th>Greek</th>
<th>Russian</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Г</td>
<td>Б</td>
<td>т</td>
</tr>
<tr>
<td>b</td>
<td>Δ</td>
<td>Г</td>
<td>г</td>
</tr>
<tr>
<td>d</td>
<td>Θ</td>
<td>И</td>
<td>Ι</td>
</tr>
<tr>
<td>g</td>
<td>Λ</td>
<td>П</td>
<td>Π</td>
</tr>
<tr>
<td>h</td>
<td>Π</td>
<td>Ф</td>
<td>Ф</td>
</tr>
<tr>
<td>m</td>
<td>Μ</td>
<td>Ч</td>
<td>Ч</td>
</tr>
<tr>
<td>n</td>
<td>Ν</td>
<td>Ш</td>
<td>Ш</td>
</tr>
<tr>
<td>p</td>
<td>π</td>
<td>Φ</td>
<td>Φ</td>
</tr>
<tr>
<td>q</td>
<td>φ</td>
<td>Т</td>
<td>Т</td>
</tr>
<tr>
<td>u</td>
<td>Ω</td>
<td>Я</td>
<td>Я</td>
</tr>
<tr>
<td>y</td>
<td>μ</td>
<td>Υ</td>
<td>Υ</td>
</tr>
</tbody>
</table>

13.15
8. GRAPHICAL PROSODICS - GRAPHEMICS VS. GRAPHEMICS

Prosodics, in the traditional sense, has referred to the functions of stress, pitch, duration, and intonation in the spoken language. Each of these attributes carries information in the communication process. This information may denote a mood, such as fear or anger; or it may change the entire sense of a statement as found in sarcastic expressions. Likewise, there exists a graphical prosodics with similar functions. We recognize this in the individual writing styles that we encounter. So strongly does the prosodic information in handwritten text carry information about the author of the text, that entire studies have been devoted to personality analysis through handwriting traits. Similarly, we utilize different type styles for different occasions, each conveying their own special mood. One would not think of using a formal business style on a wedding invitation. The art of calligraphy perhaps epitomizes the extent to which graphical prosodics can be carried. Whereas we associate psychological invariance with the study of graphemics, we now introduce the study of graphical prosodics under the name of "graphetics". Our only motive for introducing this subject is to contrast it with graphemics. Submerged in a multitude of prosodic environments, the sign's distinctive feature description remains invariant. This is an important point and the foundation upon which we build our machine recognition system. It is also the psychological foundation upon which man recognizes textual material, be it handwritten or typed.

9. THE MACHINE RECOGNITION SYSTEM

We now come to that aspect of our inquiry that is the goal of the above extensive analysis - the actual machine implementation of a character recognition system. Recognition systems are generally divided into two parts: (1) the training stage, and (2) the testing stage (or recognition stage). Although we do not have a formal "training stage" in our system, we have by no means neglected this aspect of computer character recognition. One must remember the purpose of the training stage - namely, to discover those features upon which the pattern classes may be distinguished. Training, then, is a discovery procedure. We have here applied an alternative discovery procedure - a linguistic psychoanalysis. Such an approach has been taken because of its applicability to this area of pattern recognition. It is felt that a linguistic inquiry is not only appropriate as a discovery procedure, but is far superior to a mathematical approach that might be taken by a computer system. In saying this, the author realizes full well that the opposite would be true in other circumstances. The linguist would never claim the ability to ferret out those distinctive features in biomedical applications of pattern recognition. However, he is
fully competent to bring his expertise to bear in linguistic and linguistically related investigations.

9.1 The Segmental Search

Inherent in the recognition system must be the capability to identify the three basic graphemic segments. This is not an easy task since the pattern of dots received by the retina (or, in our case, the optical scanner) only suggests the abstract pattern which we are attempting to identify. Therefore, the first task of the computer system is to recognize those abstract segments in the same manner as would the human mind recognize them.

9.2 A Heuristic Search

Once the fundamental segments have been located within a character, their topological, or graphemic, relationships need to be ascertained. This can be accomplished by identifying those features that distinguish a segment pair as a legitimate grapheme. Once the graphemes are located, it is a simple task to look up the character's identification in a table that maintains the entire featural description for each character.

The process of recognition can be greatly helped by utilizing a heuristic approach. We know what we are looking for. Therefore, rather than searching randomly for unexpected graphemes, we can search heuristically for expected graphemes. This will not only speed up the recognition process, but it will also help to eliminate "noise", i.e., spurious strokes on the page resulting, generally, from stylistic variations.

9.3 The Treatment of Ambiguities

It is recognized that legitimate ambiguities may arise. Such is often the case in "sloppy" handwriting. What is the computer system to do in such cases? Each grapheme will be determined by its "closeness" in featural description to the specified grapheme's binary description. For example, an intersection of two line segments may be found as occurring in the "center" of one of the segments. This is a binary evaluation. The raw data used to make this judgment may indicate that the intersection was so classified by a "small" margin. When such is the case, and an ambiguity in recognition exists, alternative featural classifications are taken in an attempt to disambiguate the character analysis.

When this approach fails to eliminate the ambiguity, a context sensitive examination may be performed. Although not implemented in the system described in this paper, it would check a "spelling" dictionary in a search for a legitimate word, alternating the ambiguous character's identifi-
cation during the search. The human performs a similar search, subconsciously, extending the domain beyond a simple spelling check to include the sense or contextual meaning of possible alternatives for the ambiguous word.

10. A PRELIMINARY IMPLEMENTATION

10.1 The Main Control Algorithm

The main control algorithm allows the user to examine up to 1248 character patterns, 48 patterns for each of the 26 characters in the Roman alphabet. These characters were obtained by digitizing handwritten samples from eight individuals. Each individual contributed six sample patterns for each of the 26 letters of the alphabet.

The program begins in a query mode, requesting from the user the following information:

A. To which output device (scope or plotter) should the letters be sent?

B. Do you wish to examine all letters of each character selected?

C. Do you wish all characters to be examined?

D. If the answer to C was "NO", the system asks, on a character by character basis, if the user wishes the character to be examined.

E. If the answer to B was "NO", the system asks for the upper and lower bounds on the contiguous set of samples (1 - 48 possible) to be examined for the given character.

F. Do you wish each character examined to be sent to the output device (scope or plotter)? If the answer to this question is "NO", only those characters that were not properly identified by the recognition system are sent to the output device.

After the above query, the system proceeds to examine the requested character patterns, one at a time. This examination consists of a recognition attempt. If the character was not recognized correctly, its dot matrix plus the line segment abstractions used in the recognition attempt are sent to the output device. The system proceeds thus until all requested character patterns have been examined for identification.
10.2 Segment Recognition

We found in the foregoing discussion that there were three psychological segments whose mutual relationships with each other yield the distinctive features in the character recognition of man. These segments are (1) the "straight line", (2) the "open curve", and (3) the "closed curve". These are abstract entities, related to the set of source data pixels through the abstraction mechanism of the human mind. It is this mechanism that must be modeled in segment identification. For this preliminary recognition implementation, we only utilized a "straight line" recognizing mechanism, the "open curve" and "closed curve" segment recognition being postponed until subsequent implementations. Thus, we were limited in the feature recognition capability possible in the current system.

The "straight line" algorithm consisted of strobing in from the left, right, top, or bottom of a boxed character, looking for a left vertical, right vertical, top horizontal, or bottom horizontal line, respectively. The strobe generally started at the center of a box edge, thus limiting our line identification to the information gained from a single row or column. The sought-for lines were allowed to vary plus or minus 45 degrees from the vertical (or horizontal). The desired straight line was determined by examining a 91 degree arc (-45 degrees to +45 degrees), one degree at a time, for the longest contiguous sequence of pixels contained between two parallel bounding lines whose separation was a function of the sought-for line's thickness. The line was then determined by a linear least squares fit, using those pixels that were contained in the desired line but not also contained in an intersecting line.

10.3 Feature Determination

The topological relationships between "straight lines" were based on those developed in this paper. However, liberties were taken to vary from these strict featural relationships in order to accommodate a more simplified system as a first implementational approximation to human character recognition modeling. Also, with the limitation to a single segment type abstraction, we were forced to examine other than strict graphemic relationships to produce a sufficiently large set of attributes for distinguishing between characters. These attributes include distance relationships between line end- and mid-points, slope relationships between lines, and slope bounds for given lines, etc. The Boolean test conditions for each of the ten letters considered are found in the program code of the CHANLZ subroutine.
11. DISCUSSION OF RESULTS

Figures 2a and 2b show samples of characters that were recognized correctly. The straight line abstractions by the system are also superimposed on these characters. In general, the line recognition algorithm was successful. However, there are certain weaknesses that it possesses which can be discovered from a close inspection of the characters that were NOT recognized correctly.

It is instructive to note those characters which yielded the greatest numbers of errors. Time did not allow us to incorporate a topological recognition algorithm for each of the 26 letters of the alphabet. Yet an analysis of those considered was very revealing. The system was able to recognize with 100% accuracy the letters I, L, T, V, and Z if they alone constituted the set being examined. When J was added to this set, one error appeared. Adding F increased the number of incorrect recognition attempts by 5. The system, then, performed with a 98.2% correct recognition on this expanded set of characters. However, adding the characters K, X, and Y resulted in a large increase of incorrect recognition attempts (28 total errors) yielding only a 94.2% correct recognition attempt for this final set of ten characters. These additional errors provided a means of scrutinizing the line recognition algorithm, supplying us with an analysis which will aid in improving this algorithm for future implementations.

Figures 3a, 3b, and 3c show the letters that were incorrectly recognized and the results of the line algorithm applied to these characters in the recognition process. These errors can be grouped into the following categories:


4. Diagonal was found as a "vertical": K-25, K-27, K-28. These could have been grouped in (3). However, it was evident that they resulted from the wide-angle line search and are thus listed separately.
Fig. 2a: Correctly recognized characters with "line" abstractions.
Fig. 2b: Correctly recognized characters with "line" abstraction.
5. Ambiguity due to "thick" lines: K-31, K-36, X-33, X-34, X-35.

6. Sloppy character: Y-12. This could also be included in (3). However, from a human recognition standpoint, it was determined to isolate its primary deficiency.

7. The errors in "T" were not errors in the T-algorithm but resulted from the K and Y algorithms being applied (with an improper recognition) prior to the T algorithm. Without K, X, and Y, these errors did not exist.

The line recognition mechanism used in this preliminary implementation could be improved for future systems. As was noted earlier, the line routine scans a 91 degree angle for the longest line within this arc. If the system were able to specify the scan angle, several errors could be eliminated by looking for specific lines, as determined heuristically, reducing the chances of locking onto a "line" which intersects the desired line at an acute angle. The line algorithm could be further improved by allowing the system to determine the average line thickness (used in the search process) over a specified scan range instead of scanning the entire length (or width) of the boxed character. This would prevent the system from missing the desired line whose thickness is greater than the maximum allowed thickness, determined primarily from another (thinner) line in the same scan range. Determining the existence of a line that one is looking for would become more efficient if the line search algorithm were to scan for the desired line from several levels instead of just a single level. A heuristic could then be used to determine the proper line sought for (or its absence).

The actual character could receive some preliminary massaging prior to character identification. The object of such an effort would be to (1) eliminate "noise" due to spurious, isolated, set pixels, (2) smooth lines by closing gaps consisting of single pixel discontinuities, and (3) "shrink" the character, artificially reducing the line width. Each of these operations would improve the chances of identifying a given character correctly.

Additional attributes would be necessary to include the remainder of the upper-case characters into the recognition system. The set of letters \{A(some) , H, M, N, U, W\} could be approached by looking for a pair of "parallel" vertical lines that are connected in a unique manner. A connectivity algorithm would be used to determine where the parallel lines were connected, thus completing the identification of this subset of the alphabet. Some of the "A" characters could be recognized in the same manner as the "V" was recognized, since such "V-shaped A's" are simply inversions of an actual
Fig. 32: Incorrectly recognized characters with "line" abstractions.
Fig. 3b: Incorrectly recognized characters with "line" abstractions.
Fig. 3c: Incorrectly recognized characters with "line" abstractions.
"V". The remaining letters, most of which contain closed or open curves, will need yet another algorithm to detect these curves. Without modeling the curve recognition system of the human mind, a simple row strobe could be used to look for enclosed surfaces, using a heuristic to determine the type and number of closed or open surfaces encountered.

The attributes formed from the relationships between lines are only approximations to the graphemic distinctive features discussed in this paper. The location of line intersections was not computed for the sake of programming simplicity and run-time speed. These were approximated on the basis of the distances between line end-points. However, to be accurate and avoid some of the pitfalls of this approach, a rigorous methodology should be used in which the actual intersections would be calculated in order to accurately identify graphemic features. In addition to correctly looking for line-line distinctive features, we need to develop the open-curve and closed-curve segment recognition mechanisms. These algorithms will certainly be more sophisticated than the simple line recognition algorithm.

It is felt that the accuracy of character recognition achieved with the ten characters examined certainly supports the distinctive feature analysis provided in this paper. This becomes more evident when we consider that only approximations to the actual topological distinctive features were implemented. Throughout the error analysis, it could be seen that an actual implementation of the graphemic features (e.g. intersection locations, etc.) would have averted several recognition errors that resulted from approximations only to the true topological features. It is hoped that future research along these lines will yet vindicate this approach in its entirety.

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ACQUIRING PRINT FLUENCY CONCURRENTLY WITH 
FIRST LANGUAGE SPEECH FLUENCY

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Soderbergh (1977) and others have proposed that reading and writing (print fluency) should develop in parallel with understanding and producing speech (speech fluency). The arguments advanced include the proposal that the toddler ages of two to four are critical years for the development of any language or dialect of language including the print dialect. Other proposals stress more the assumption that toddlers are more receptive, more adaptable, more delighted with language learning and thus print literacy can be acquired with less negative affect than at later ages (Domn, 1964). Others accept a more pragmatic stance suggesting that the process can be done, and thus provide early quality entertainment for children whose parents cannot spend time reading to them (Ledson, 1975).

There is already evidence that some children who are provided fifty or so net hours of intensive experience in processing of print can learn to read at levels approaching their level of speech. This means that a three-year old can learn to read third grade materials and a five-year old can learn to read fifth or sixth grade books.

The long-term effects of attaining print fluency levels that equal speech fluency levels at these early ages are not known. The only data available have been case study reports. Durkin (1966) found evidence of enduring advantages associated with pre-school reading skill, but the children observed were self-selected in that for whatever reasons, advantage or unusual circumstance, they entered school already reading. Moore (1972) has reported on a group of inner-city children who acquired reading and writing skills before four. It is very difficult to assume that these children had any advantages over the general population that would have made them able to demonstrate precocious reading. On the contrary they were drawn from a population that usually experienced substantial failure in the conventional reading programs of the school. However, the sample was not sufficiently large or randomly drawn so as to provide assurance that any toddler using speech is capable of attaining a comparable level of print fluency when provided with fifty or so hours of effective print experience.

It has been the purpose of seven studies to answer a number of questions related to the proposal of concurrent learning of speech and print.

The first question is that of general feasibility. Can any speaking child, and thus almost any child of age two and beyond, acquire fluency in print? At the level of the speech fluency of that child?
Traditional developmental theory suggests that there is inadequate development of one-to-one correspondence processing for reading and inadequate development of serial processing for writing to occur in average two and three-year-olds. In contrast, language development scholars suggest that ages two to four are a critical, or at least an especially receptive period for development of print skills. To resolve this dilemma, we must gather data from children that might represent the general toddler population. We must also provide these toddlers with print experience that will be effectively involving since Gates and Barns (1936) suggested nearly fifty years ago that by thoughtful design of teaching method, the traditional age-related limits on learning to read can be greatly lowered or removed. Our question is, can they be removed for the typical two-year-old toddler who is acquiring speech?

Other questions to follow.

They include questions regarding the relative advantages and problems of parallel introduction of spelling. Related problems include phonic strategies, orthographic strategies, system versus child-structured content and ecological validity of the writing task.

Another set of questions is related to the consequence of any discovery of age-related differences. If they are found then how can they be understood and what implications are there for instruction at each early age.

Finally, there is the question of the influence and capability for instruction of the parents since very few twos or even threes or fours are found outside the home in pre-school institutions. If parents do not teach them, they will not be taught.

Methods:

The methods of this series of studies as seen in retrospect have progressively focused on younger and younger children. They have employed a variety of instructional strategies and materials with the overarching common question being to discover the age-related limits of toddler ability, given the most effective known instructional methods.

Study 1. Moore (1972) had demonstrated the effectiveness of the talking typewriter. Doman (1964) had urged a sight method based upon names of salient persons and objects in the very young child's environment. Lee and Black (1981) developed a series of thirty typing lessons as Moore proposed, for Steven Lee, his five-year-old son. Lee began using familiar vocabulary as Doman proposed, but immediately added self-selected simple sentence structures and phonetically related word sets. The vocabulary content was predominantly determined by his son with the father occasionally adding phonetically related words as a game.

Words were printed and presented on 3 x 5 cards. They were then initially typed by the father as a demonstration until the boy learned
the key locations. Then the boy typed the word. The word was then practiced as the boy typed sentences that used the word. The father spent fifteen minutes a day demonstrating new words, dictating practice sentences, prompting and correcting. The boy typically practiced alone another fifteen or thirty minutes.

The typewriter used was an IBM Selectric equipped with erasure key which the boy used as needed. Figure 1 is a demonstration of typing from oral dictation after three months of practice. The boy spelled correctly some three hundred words. He used punctuation conventions, including capital letters, periods and commas. He was able to correctly decode most printed words he encountered. He typed using the touch method which he insisted on using after three weeks.

In a period of some forty hours of undistracted print experience, the child developed substantial word attack skills, impressive spelling and typing skills.

It should be noted that the child's first language was Korean and the older brother had already encountered some failure in school reading programs. The father was a linguistics student. He was patient but persistent. Praise was liberal but perfection was expected leading to regular use of the correction key.

Conclusion: This demonstration was amazingly successful. The typewriter plus parent strategy was most effective. A method focusing on writing succeeded in yielding reading skills as a by-product. We had another anecdote but no representative sample. We had a highly effective method controlled by child and parent. However, we did not know what much younger children could do.

Study II. The question now was whether much younger children could be equally successful.

A series of workshops were organized for parents. The Lee-Black method was described. Parents were invited to attempt the same system with children ranging from two to five. There was a follow-up after a period of three months during which the parents attended monthly workshops.

In this series (Black & Hilton) it was observed that children at all age levels including a 22-month-old child made progress. In no case did the rate of progress approach that of Steven Lee who had averaged about three new words per day. The averages were closer to one word a day which approaches that of first graders.

Because of the slower rate of progress, none of the children reached the level of readily decoding or encoding unencountered words in the three months of the study.

Final interviews revealed two probable causes. One was that parents had not provided instruction faithfully. In fact, not more than 20% of the parents provided as much as an average of 10 minutes per day. The
reason given for such low effort by parents were frequently complaints about typewriters (many of which were mechanical), disruptions related to illness or visits or vacations, or resistance by the child.

The second possible problem was an apparent age-related problem such that while some of the youngest children made good progress, in general the younger the child, the greater the likelihood of failure.

Conclusion: This uncontrolled set of one hundred case studies showed that some children of every age level could learn to read and spell significant numbers of words approaching the number usually learned in the first grade. However, many at each age level essentially aborted for a wide variety of reasons. It seemed that the greatest problem was the delivery system (parents and mostly mechanical typewriters) and not the children. However, it appeared that our methods needed to be tuned better to the very youngest children.

Study III. Our two problems we chose to investigate next related to the delivery system and the age variable. We decided to compare parents given regular and well-defined instructions with para-professionals equally instructed. Secondly, we selected eighteen children whose ages ranged over the two to five range.

We provided all children with two weeks of parent instruction and two weeks of para-professional instruction. Our para-professionals used IBM Selectrics. Parents used whatever typewriters they had. The results were that para-professionals obtained high gains while parents obtained very minimal ones. Furthermore, except for the children below three, there were no age differences. For the youngest children, the reading scores were modest and the writing scores approached zero.

Conclusion: Although the parents were college students and enthusiastic volunteers for the study, there was found again a very high failure rate related to the low reported level of targeted typing practice. When para-professionals taught for 10 minutes a day there were impressive gains except for the twos. These gains were obtained on both reading and spelling measures.

Study IV. The question of greatest concern was how to improve parent effectiveness. If only ten or twenty percent of apparently motivated and highly educated parents could or would invest ten minutes a day to the program, then there would be minimal likelihood of any significant number of twos or threes ever being taught.

We (Bergin, Kowallis and Black, 1981) decided to compare the effects of highly motivated (cf. Weight Watchers) seminars and regular home demonstration visits (cf. Levenstein, 1971) with the effects of a manual and kit only.

The manual was conceptually simplified to more clearly resemble a language experience approach. Phase one consisted of introduction of family names, pets, favorite toys and any other favorite person or
thing. Phase two introduced a few action verbs with suggested games involving sentences made of phase one nouns and phase two verbs. Phase three included predicate nouns and adjectives involving clothes, food, toys and household objects that would create a third word in the sentence. Finally, words consisting of functors including prepositions, articles, modals and some adverbs defined phase four. These words were to be added to prior words in sentence context as naturally and unobtrusively as possible.

The manual gave rationale, examples and learning games. A kit was also supplied consisting of a simulated keyboard consisting of pockets holding letter cards which could be easily removed to "type" words.

A cross-section of community mothers participated.

The results showed appreciable success for all parent groups with the manual-only group performing as well as the motivational plus demonstrative plus manual group.

Performance of children was very similar to our previous result in that there was first-grade level progress for all but the twos on both reading and spelling.

Conclusion: The parent problem seemed to be at least partially solved by providing manuals and materials which were easy to use and interesting to children. Extraneous motivational supports were not required by these already motivated parents. What was effective was a simplified teaching approach which gave more control to child and parent. It also avoided the mechanical problems associated with most typewriters.

There remained the question regarding the marginal or failing performance of the twos. Why could they talk but not write?

Study V. It was not clear what the effect of concurrent write (spell) and read (recognition) was. Was it symbiotic with the processes assisting one another? Was it interfering or were they independent?

A further question was whether our consistent success across the two to five range could be maintained in a non-collegiate area.

We (Stewart & Black) determined to work in a public day-care nursery where mothers worked in mostly industrial and service vocations and had no more than high school education. There were 18 children participating, ranging from two to five.

There were three groups, one receiving all reading, another all spelling and a third both reading and spelling. All children received fifteen minutes daily for two months.

The instruction generally followed the Bergin, Black (1981) manual. However, it was decided to adapt methods to individual needs as much as necessary to get as near one hundred percent involvement in the target
task for the fifteen minutes. Thus one child used a typewriter, another preferred a crayon, and a third traced in sand. Similar adaptations were made to suit each child's preference in the reading instruction, including a variety of word games and even sweet treats for children who would otherwise lag. Using these individualized (diographic) rather than a fixed (nomothetic) approaches, the task-oriented behavior was relatively high and uniform for a given age for all children for their entire 15 minutes.

The results for reading revealed a very consistent ($r = .93$) effect associated with age showing a modest but steady increase in performance over age level. The difference between those receiving 15 minutes reading and divided reading and spelling was very reliable and favored the 15 minute condition.

The results were similar for spelling but somewhat less reliable.

Conclusion: These findings showed a powerful age-related effect with no discontinuity between the twos and fives. Twos could perform reliably, but with somewhat less success than older children. The data also strongly suggest that twos or any other younger age level can equal the performance of older children if the total instructional time is modestly increased. This leads to an assumption that the age-related differences are not related to any general or verbal aptitude but to the culturally influenced tendency of fives to find print more socially relevant than do twos; thus they attend more effectively to the task. Fifteen minutes with a five may yield close to fifteen minutes of effective print processing, while fifteen minutes with a two may yield closer to five. However a dedicated parent could enable the two to equal the learning pace of the five if added training sessions were undertaken to bring the effective total time on task up to the level of the five.

These very consistent results seem to be very much influenced by the adaptable (idiographic) approach of the tutor. In all previous studies the method was adaptable in some respects but rigid in either vocabulary, medium such as typewriter, or method such as phonetic emphasis. In this study an entire menu of strategies were engaged with the only restriction being that they maximized apparent time on task and that the task be print processing.

Study VI. Stewart & Black (1982) showed that a month of instruction could yield significant learning by twos, that more instructional time could increase their performance and that this could happen among children from homes where print was very little in evidence. However, the numbers of twos in that study were only four. A larger sample would be needed to add confidence to these findings. Furthermore, the twos seemed to be far more successful with reading than with the spelling task.

In this study Tang and Black (1982) selected 18 twos distributed evenly over each age quarter from first to fourth quarter twos. They were
children of college students who volunteered to participate. The method chosen emphasized spelling with stress on phonetic sounds of the component letters. The words were selected from the Peabody Picture Vocabulary List including only those that were most frequently recognized by a pilot group of twos.

In this study all children (except one who refused to talk to the experimenters) made regular progress over the eight weeks.

There were significant differences between age levels. Children were taught either 7.5, 15 or 30 minutes. Differences were obtained between them with some evidence that although 30 minutes was most effective, fifteen minutes was most efficient.

Variance among children was most associated \((r = .84)\) with experimenter estimates of minutes of task involvement for each child. Thus those who apparently attended most were those who learned most of both reading and spelling items.

**Conclusion**: This study is the most conclusive yet in confirming that twos can acquire print skills. It strongly suggests that at least for the level of reading and spelling attempted that the major factor influencing learning is the learner's time on task. This can be influenced by extending instructional time, but a fifteen-minute session seems to be most efficient for a single session. Extension requires multiple sessions per day rather than large single sessions.

Study V suggested that time on task is greatly influenced by adapting instruction to idiosyncracies of the child's interests.

At the limited fluency level attained in the present series of studies it appears that for twos reading and spelling are acquired as independent skills.

It is assumed, however, that a modest increase in instructional time will bring the child to the level at which phonetic and graphemic generalizations made in spelling will facilitate phonetic decoding in reading as was observed in the case of Steve Lee.

Extrapolating across all our studies and the cases reported in the literature there seems to be a consistent requirement of some fifty hours of directed on-target processing to attain a level of functional literacy with at least phonetic writing. These hours are an accumulation of highly effective minutes which for some are spread over many months of brief but effective interludes (eg. Soderbergh). For others they are intensive sessions repeated several times a day (eg. Lee & Black, 1981 and Ledson, 1975). For some each session is highly efficient (Stewart & Black, 1982), and for others it may be filled with distractions and barriers which can slow progress at any age to zero.

**Projection**: Underway are two studies which will extend our present vision of the achievements of only the first two months of instruction
until we can observe the development of rule-based encoding and decoding. We are finding that phonetic and graphemic skills begin to emerge after ten to twenty hours of effective time on task by the child.

We are also developing computer-based games which are designed to enable even the twos to acquire levels of print fluency equal to their speech fluency.

Conclusion: Our evidence supports the claim that under conditions that encourage the processing of print that all speaking twos can acquire print skills at rates that approach first grade expectations. That is about a word a day during the first weeks given ten minutes per day of targeted processing by the child.

It is also clear that parents can be effective instructors with very minimal direction. However, for a variety of reasons most abort the process.

Finally, these data relate only to the initial stage which is highly rote-like in character. Data is now being gathered which suggests that rule-based phonetic-graphemic skills are developed readily at all ages shortly after some twenty hours in stage one.
INTEGRATING WORD PROCESSING, 
TERM MANAGEMENT, 
AND MACHINE TRANSLATION

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At last year's DLLS symposium (March, 1981), the author proposed on a "suggestion box" translator aid. In October 1981, the system became operational and was tested by the students in a translation seminar. Further consideration of the problem of computer aids for translation, together with the many good ideas put forth by the seminar students, has resulted in a proposal for a significantly expanded system which includes the "suggestion box" aid as one component. This new translator aid system integrates word processing, term management, and machine translation.

Traditionally, machine translation systems were designed with the long-range goal of replacing the human translator. The system proposed in this paper, on the other hand, is designed to be a tool for a human translator, never a replacement. The new system will have three levels. Level two corresponds to the "suggestion box" aid of last year. Level one is a lower level which does not even require the source text to be available in machine-readable form. Level three is the highest level and requires a remote machine translation system which can operate without the presence of a translator. Levels one and two are now being programmed on the IBM 370/138 computer at the BYU Humanities Research Center. Work on level three will begin next year.

THE "ALL OR NOTHING" SYNDROME

Originally, fully automatic high-quality translation was the only goal of research in machine translation. Until recently, there seemed to be a widely shared assumption that the only excuse for the inclusion of a human translator in a
machine translation system was as a temporary, unwanted appendage to be eliminated as soon as research progressed a little further. This "all or nothing" syndrome drove early machine translation researchers to aim for a fully automatic system or nothing at all. It is now quite respectable in computational linguistics to develop a computer system which is a tool used by a human expert to access information helpful in arriving at a diagnosis or other conclusion. Perhaps, then, it is time to entertain the possibility that it is also respectable to develop a machine translation system which includes sophisticated linguistic processing yet is designed to be used as a tool for the human translator.

If each sentence of the final translation is expected to be a straight machine translation or at worst a slight revision of a machine translated sentence, then disappointment is probable. After experimentation, Brinkmann concluded that "the post-editing effort required to provide texts having a correctness rate of 75 or even 80 percent with the corrections necessary to reach an acceptable standard of quality is unjustifiable as far as expenditure of money and manpower is concerned" (Brinkmann, 1980). Thus, a strict post-edit approach must be nearly perfect or it is almost useless. Many projects start out with high goals, assuming that post-editing can surely rescue them if their original goals are not achieved. But even post-editing may not make the system viable.

A PROPOSED ALTERNATIVE

This paper proposes that an interesting alternative to the "all or nothing" approach is to anticipate from the beginning that not every sentence of every text will be translated by computer and find its way to the target text with little or no revision. Then an effort can be made from the beginning to provide for a smooth integration of human and machine translations. The proposed translator-aid system (TAS) will have three integrated levels of aid under the control of the translator. We will now describe the three levels.

Level one translator aids can be used immediately even without the source text being in machine-readable form. In other words, the translator can sit down with a source text on paper and begin translating much as if at a typewriter. Level
one includes a word processor with integrated terminology aids. For familiar
terms that recur there is a monolingual expansion code table which allows the
user to insert user-defined abbreviations in the text and let the machine expand
them. This feature is akin to the "macro" capability on some word processors.
The key can be several characters long instead of a single control character, so
the number of expansion codes available is limited principally by the desire of the
translator. Level one also provides access to a bilingual terminology data bank.
There is a term file in the microcomputer itself under the control of the
individual translator. The translator may also have access to a larger, shared
term bank (through telecommunications or a local network). Level one is similar
to a translator aid proposed by Leland Wright, a well-known professional
translator. Ideally, the translator would also have access to a data base of texts
(both original and translated) which may be useful as research tools.

**Level two** translator aids require the source text to be in machine-readable form.
Included in level two are utilities to process the source text according to the
desires of the translator. For example, the translator may run across an unusual
term and request a list of all occurrences of that term in that text. Level two
also includes a "suggestion box" option (Melby, 1981) which the translator can
invoke. This feature causes each word of the current text segment to be
automatically looked up in the term file and displays any matches in a field of
the screen called the suggestion box. If the translator opts to use the suggested
translation of a term, a keystroke or two will insert it into the text at the point
specified by the translator. If the translator desires, a morphological routine can
be activated to inflect the term according to evidence available in the source and
target segments.

**Level three** translator aids integrate the translator work station with a full-blown
machine translation (MT) system. The MT component can be any machine
translation system that includes a self-evaluation procedure. The system uses that
procedure to assign to each of the translated sentences a problem rating (e.g. "A"
means no detected problems, "B" means some uncertainty about parsing or
semantic choices made, "C" means probable flaw, and "D" means severely
deficient).
The actual machine translation for level three is done remotely on a separate computer without the direct involvement of a human translator. Then the segmented source text and the machine translation for each segment, together with its self-assigned "grade", are placed on a diskette and sent to the translator. The translator works at a small station which, ideally, is a self-contained microcomputer which is programmed to support all three levels of aid. Level one, as mentioned previously, requires no diskette containing source text. This means that at level one, the translator can get straight to work on a new document. At level two, a diskette containing source text is needed before the translator can begin work. And at level three, a diskette containing source text and machine translation is needed before work can begin.

At level three, on any segment, the translator may request to see the machine translation of that segment. If it looks good, the translator can pull it down into the work area, revise it as needed, and thus incorporate it into the translation being produced by the translator. Or the translator may request to see all those machine translations that have a rating above a specified threshold (e.g. above "C"). Of course, the translator is never obliged to use the machine translation unless the translator feels it is more efficient to use it than to translate manually. No pressure is needed other than the pressure to produce rapid, high-quality translations. If using the machine translations make the translation process go faster and better, then the translator will naturally use them.

A positive aspect of this three level approach is that while level three is dramatically more complex linguistically and computationally than level two, level three appears to the translator to be very similar to level two. Level two presents key terms in the sentence; level three presents whole sentences. At level three, any segment which does not have a qualifying machine translation will cause a smooth, automatic shift to level two for that segment and back to level three for the next qualifying segment. So, when good level three segments are available, it can speed up the translation considerably, but their absence does not stop the translation process or even greatly hinder it. Thus, a multi-level system can be put into production much sooner than a conventional post-edit system. And the sooner a system is put into production, the sooner useful feedback is obtained from the users.
CONCLUSION

The multi-level approach described in this paper is designed to please (a) the sponsors (because the system is useful early in the project and becomes more useful with time), (b) the users (because they are in control and choose the level of aid), and (c) the linguists and programmers (because they are not pressured to make compromises just to get automatic translation on every sentence).

Future papers will report on progress and problems in the design and implementation of the translator aid system described in this paper.

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Bilingual and multilingual terminology data banks (term banks) have proven to be an effective aid to computer-supported translation. However, some translation problems are more amenable to term bank assistance than others. The most resistant translation problem and, ironically, the fundamental problem which translation term banks are intended to alleviate has been that of identifying precisely that translation or those translations which are admissible target language (TL) equivalents for a given term in a source language (SL) text. This is compounded by the related problems of homonymy and polysemy with the SL term and synonymy with the TL equivalents.

Heretofore the principal method of narrowing the list of all potential translations for a SL term to the list of legitimate alternatives in a given context has consisted in filtering out irrelevant translations on the basis of data associated with each translation. The selectional criterion chosen most often is the subject field or fields of the translations. Other selectional filters are based on source and reliability indicators in term bank entries. In applications where SL texts undergo a linguistic analysis, potential term translations are sometimes screened by their part of speech or some other grammatical feature.

The problem of translation identification for a single term generalizes to the problem of sublanguage determination for a particular text. It is more than trivially true that there are as many written sublanguages as there are texts. This is manifest in the practical problem of specifying a translation lexicon for every document at the time it is processed.

Sublanguage determination is compounded when a translation organization must deal with texts of diverse subject matter. In the past most organizations have had to choose between two alternatives: either they could concentrate all of their terminology holdings in one comprehensive file, or they could divide them among many specialized files. The former solution promotes the sharing of terminology work, but it requires greater coordination of effort. The latter solution allows differing disciplines greater independence, but it entails some duplication of effort. The several specialized files may be smaller than the single comprehensive file, but their collective size will inevitably be greater.

Pooling

Some organizations have developed initial capabilities for pooling or sequencing in order to deal with the translation identification/sublanguage problem. Pooling refers to the creation of internally
cohesive subinventories, or pools, of a data base. For maximum economy of storage space and management time, pools should be kept as disjoint as possible. Nevertheless, duplication of keys (SL terms in a translation term bank) in separate pools is both possible and desirable when the data portions of the records (lists of translations and the associated fiches in this case) are different. The least efficient use of storage space and management time is attained when distinct pools contain a sizeable portion of common keys and records. This is easily remedied by creating a new pool from their intersection and deleting the redundant entries from the original pools.

Term pools are organized by function and may reflect any classification the sponsoring organization finds useful. At the very least they ought to be distinguished so as to reflect the common origin of a group of terms and the administering body which is responsible for their continued development and maintenance. Originating and administering bodies may be as comprehensive in their audience as a standards organization or a terminology vendor, or they may be as restricted as a company division or even an individual translator.

In order for pooling to aid in translation identification, pools should reflect a domain of application. Applicational domains may be as broad as a branch of science or a technical field, or as narrow as a company product line or a chapter in a particular operations manual.

Pools may be created which bear a special relationship to one or more other pools. The most common relationship between associated pools involves a base pool which is generally satisfactory for the purposes it was designed to serve and a (generally much smaller) modifying pool which contains emendations and omissions appropriate for a more specialized environment. Examples of modifying pools include SL and TL dialect pools which preempt standard language pools, and customer-defined pools which override vendor-supplied pools.

Two or more pools may be designed to complement one another in some way, effectively constituting partitions of a larger whole. Unlike base and modifier pools, complementary pools may occur in any order in an applications sequence (since they do not share keys). They are exemplified by general core and increment pools with membership determined by term frequency.

Term pools may also be defined according to their intended use, current status, or life expectancy. For example, they may consist of relatively permanent and carefully reviewed terms, or they may comprise more unproven and temporary formulations. The former are typified by pools containing proper nouns of all sorts, the latter by pools for working translations, an extreme (but not farfetched) example being a translation pool created for a particular document, translator and session.

To achieve the competing goals of security and general accessibility in a term bank, users may be assigned one of three access privileges for each term pool in the bank: read/write, read-only (with which access a user may copy data automatically into a read/write pool), or no-access.
Most computer systems have good protection capabilities, and this kind of individualized access privilege can easily be implemented by way of protected user profiles. A user may never be granted a more powerful access than his privilege permits, although he is free to accept a lesser access.

Conventional term banks with term source and subject field indicators are not necessarily equivalent to term banks made up of term pools. The former classifications are descriptive in nature; the latter are organizational and can encompass terms of varying origins and domains, as the pools are independent of descriptive groupings. Conventional term banks can, however, be broken into term pools on the basis of internal descriptors. Nevertheless, while agreement between term bank assignment and internal descriptive classification may be desirable in some contexts, it is never required. The best example of the use of pooling with a translation term bank today is that of the TEAM system of Siemens AG.

**Sequencing**

Sequencing refers to the ability to specify (and access) a logical file made from an ordered string, or sequence, of pools. The set of keys from the logical file corresponds to the union of the key sets of the individual pools. The logical record associated with any logical key is the physical record with the same key in the first pool in the sequence which has that key, that is, logical keys are associated with physical records of pools in a sequence on a first-hit basis.

The object of sequencing is the creation of logical files specifically tailored to the application at hand. Two basic features make this possible: 1) the ability to access a select battery of pools and 2) the ability to order these pools by their task relevance. Typically, pools in a sequence are ordered from most specific to most general, although coordinate pools may be chained together if an application calls for it.

Pool sequences are of two types: those in which all pools are granted read-only access and those in which one or more of the pools are permitted read/write access. It is desirable in interactive applications to be able to modify every logical record immediately. Consequently, the read/write pools in sequences are always grouped at the front, so that modifications to their records take precedence over existing records in the read-only pools. This two-level access allows an end user to override translation decisions which are inappropriate in his context but which he is not authorized to change, and to do so as he encounters them in his work.

Another advantage of pooling and sequencing is the extreme versatility they provide in logical file specification. In a conventional framework a user has only as many logical files as he has physical files. The formula for the number of different logical files which can be created with pool sequencing (ignoring read and write variations in accessing the pools) is given by Total = \( \sum_{i=1}^{m} \left( m^n \right)^i \), where \( m \) is the number of available pools, \( n \) is the maximum number of pools permitted in a
sequence, and \( m! \) is the number of permutations of \( m \) things taken \( i \) at a time (\( m!/(m-i)! \)). For a pool count of 20 and a sequence maximum of 10, for example, this yields 757,822,000,000 distinct sequences. While only a few hundred would probably ever be used, this is still considerably more than the original 20.

Once its sequence is specified, an applications program is granted one of three modes of record retrieval: single, multiple or composite. In single-record mode, data is retrieved solely from the first sequenced pool in which a term appears. This is the usual mode for translation assistance routines. In multiple-record mode, data is made available from any of the sequenced pools in which a term appears. This is the mode used in file maintenance routines. Composite-record mode is a special case of multiple-record mode in which a data complex is constructed from the full set of sequenced pools in which a term appears. It is used in few applications, one example being programs for multi-pool terminology review. Strictly speaking, pool sequencing permits only single-record retrieval; the other two modes are used principally in maintenance and support programs, less in end-user applications.

Pool sequencing can be implemented in a number of ways. One somewhat intuitive implementation calls for each pool to be stored in its own file. This provides flexible storage options, and it minimizes the need for multiple read/write access to any one pool. Its principal drawback is that it requires the generation of key files for each sequence, and it imposes restrictions on the accessibility of component pools once a sequence key file has been generated.

Another implementation intermingles records from different pools in a common data base. This eliminates the problem of key file generation, because all accessing is accomplished through the data base keys. However, it increases the need for multiple read/write accessing, and it concentrates all of the term bank holdings in one large file. This can pose real, practical problems, as human and machine translation systems supported by term banks tend to be very storage-intensive.

The principle of preferring one translation over another on the basis of some feature associated with them (usually a subject field) has been applied in many systems. The full system of pool sequencing as described here was developed by Ray Arbizu, Steve Richardson, Merle Tenney, Steve Howes and others at the Translation Sciences Institute of Brigham Young University in 1980. The BYU system utilized separate pool files with independent key files for each sequence and supported single- and multiple-record retrieval. Pool sequencing variations have since been implemented at Weicher Communications and ALP Systems. The Weicher system follows the data base approach and allows single- and multiple-record retrieval, while the ALPS system is based on the separate file approach and permits single- and composite-record retrieval.
**Terminology Applications**

The principal motivation for pooling and sequencing lies in their use in direct aids to translation. However, the benefits they offer vary with the use to which they are put. Computer aids to translation are of two basic types—batch and interactive. Batch aids include the generation of subject and source glossaries, the production of text-related glossaries, and automatic machine translation. Interactive aids include text editing with translation lookup, text editing with translation prompting, and interactive machine translation.

One useful application of pool sequencing lies in the area of translation adaptation for language variety (dialect or register). For example, a standard English—standard Spanish term pool could be superseded by an Australian English—standard Spanish pool, a standard English—Chilean Spanish pool, or even an Australian English—Chilean Spanish pool. Pool sequencing is also useful in overriding a base pool to reflect the special terms and translations required by a particular translation user. This is especially true for free-lance translators and translation houses who serve many different clients, each with his own distinctive terms and preferred translations.

Without a doubt the most important use of pool sequencing in computer-supported translation lies in the area of document tailoring. Any logical file may be made to fit a document perfectly if its leading pool is dedicated to that document. This document-specific pool may be prepared in a number of ways. The document may be previewed automatically to turn up terms missing from the pools designated for the translation sequence. Furthermore, translations for terms found may be evaluated for their current applicability, and, if necessary, different translations may be entered into the document pool in their stead. This terminology preview may be conducted by a terminologist, a translator supervisor, a single translator or a group of translators assigned to the same document. In interactive applications the document pool may be altered as it is being used, and, owing to its careful preview and verification, it can be a great asset in maintaining the more permanent term pools.

As pooling and sequencing improve the capabilities of translation aids, so they enhance the performance of the term bank maintenance procedures which support them. Dictionary development utilizes multiple-record retrieval so that the terminologist or translator may base his work on any existing version of a term record in his working sequence. The trailing pools in his sequence may be relatively permanent members of the term bank, for example, pools which would normally back up the leading pool in translation sequences. They may also correspond to pools added to the term bank temporarily for the express purpose of comparison with the leading pool, for example, pools covering the same ground as the leading pool but prepared elsewhere.

As stated above, individual document pools can be a valuable resource to pools of a more general and permanent nature. The same is true of individual translator pools. If a more general pool is intended to be the immediate backup of one of these, then it may be compared against
the more specific pool periodically to identify and consider potential changes. Similarly, the next more general backup may be checked against the first, and so on. Once a general pool is updated to reflect improvements in a more specific pool, the specific pool can be reviewed in the context of these changes to see if its entries should then be deleted, retained as is or changed further. In this fashion, improvements made to any pool should be propagated upward and downward as far as is appropriate. If these reviews are carried out conscientiously, the pools will achieve greater exactness and currency while minimizing redundancy. Thus, a well-run term bank is more a living organism than it is a static repository.

The practice of pooling enables some merge options that would not otherwise be possible. Traditionally, merging two files creates a third, which is in some sense their union. Unfortunately, if two keys have different data, then the data of one is kept and that of the other is lost. With pooling, the result of merging two pools is not one pool more, but five: two for terms belonging to one pool but not the other, one for common terms having identical data, and two for common terms with different data. This not only preserves the original information, but organizes it and prepares it for subsequent review. This facility is required when a pool (prepared by a vendor, say, or an organizational branch at a remote site) is maintained at one location, but copies are sent to other locations and new releases are issued periodically.

Print routines may access pool sequences in any of the three record retrieval modes. Consequently, they are able to produce worksheets of terms involved in the dictionary development and merge applications described above. Terminologists and translators may use these worksheets in preparing for term bank maintenance sessions at a video display terminal, or they may choose to do all of their work—evaluation and data entry—at the terminal.

Translation term banks have many secondary applications which can be accomplished better with special-purpose logical files made possible by pool sequencing. Included among these applications are dictionary and glossary publication, language planning and standardization, and foreign language instruction.

**Strengths and Weaknesses**

There are some drawbacks to the use of pooling and sequencing with translation term banks. For one thing, unless they are managed carefully the number of pools could multiply inordinately. As pools are proliferated, the potential for redundant entries and duplicated effort increases. This is more a problem of management, though, than it is of design.

In many systems, one kind of file is dependent on another kind. For example, idiom translation files are related to word translation files, or multilingual terminology files are related to supplemental monolingual files. In such cases, the problems of pointing between files are compounded. This is so because what is desired is a pointer to an
unspecified logical file record, whereas the only records available are found in a collection of physical pools which may or may not be used in a given application.

In the beginning of this paper we suggested that pool sequencing was an alternative to the subject labels and taxonomies, selectional restrictions and documentation, and other analytical procedures used in addressing the translation identification problem. This is not totally true. Pool sequencing may reduce the number of translations to one in many cases, but it will not do so in every case. For example, in a computational context, the term \textit{bit} may require translations for 'small amount' as well as for 'binary digit' (although probably not for 'drill head' or 'mouthpiece'). It is at this point that the above-mentioned selectional procedures would be invoked to further restrict the set of appropriate translations. While pool sequencing does not completely remove the need for selectional mechanisms, it does mitigate that need.

On the positive side, there are a number of considerations which argue for the use of pool sequencing. There is an improvement in the identification of translations pertinent to the terms in a given text. This is especially important in interactive translation aids, where paging through irrelevant translations is both annoying and time-consuming.

Akin to this is the tremendous flexibility permitted in logical file construction. With pool sequencing, it is not necessary to put all terminology records in a single, large file which is marginally suited to all applications but well suited to none. Nor is it necessary to create separate, overlapping files for each applicational domain. Pool sequencing realizes the advantages of the second approach, but it minimizes the amount of duplication and thereby reduces the overall storage requirements.

One of the greatest advantages of pool sequencing is the organization and management it brings to terminological data. In a field where individual organizations number their terminological holdings in the millions and neologisms are estimated to expand the vocabulary by 5% every ten years, this must be an important consideration. With the improvement in organization and management come improvements in the mutually opposing areas of security of controlled terminology and general access to terminology.

Finally, with pool sequencing it is a simple matter to add term pools from an outside source to those already present in a term bank, with or without a detailed review. This increases the portability of terminology resources and promotes their sale and exchange among terminology holders.

We feel that pool sequencing is a logical next step in the use of term banks with computer-supported translation, a step which addresses real, present needs, and a step which, once taken, will make the succeeding steps clearer in their turn.
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ON THE NONEXISTENCE OF ARTICLES IN JAPANESE: A PROBLEM IN MACHINE TRANSLATION*

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Few Western grammars of Japanese (descriptive, pedagogical, or otherwise) fail to note the absence of distinct forms in that language corresponding to the articles of English ('the', 'a(n)', and most uses of unstressed 'some'). The Japanese word shinbun, for instance, would be translated variously into English as 'the newspaper(s)', 'a newspaper', 'some newspapers', or simply 'newspaper(s)', depending upon the context (cf., e.g., Alfonso 1974:2).

Fewer still, however, are the grammars of Japanese which provide any meaningful insight at all into the identification and analysis of functionally equivalent (or at least similar) means in Japanese of expressing the types of semantic information normally associated with articles in English. The fact that morphologically distinct articles exist in some languages but not in others has given rise to a number of interesting questions, not only in general linguistic theory, but also in the areas of translation and second language acquisition research. The purpose of this paper is to discuss certain problems related to the situation just described, particularly from the perspective of the machine translation of Japanese into English.

Before we proceed to an examination of specific facts, a few general comments may be in order with regard to machine translation (hereafter MT) and the role of linguistic theory therein. Although, as Bar-Hillel and others argued several years ago, fully automatic high-quality translation is an unrealistic goal (and will likely remain so for the foreseeable future),¹ a number of projects have continued to pursue MT research, motivated in some cases at least by the growing commercial feasibility of machine-assisted translation.

While all approaches to MT are ultimately concerned with source and target languages and with the development of algorithms for transforming structures from the former into the latter, there is, of course, considerable diversity with respect to the specific algorithms so employed. Nevertheless, as outlined by Hutchins (1978), MT design strategies may be broadly characterized as either "direct" (sometimes referred to as "first generation") systems or "indirect" (or "second generation") systems.

As the name implies, "direct" MT systems were designed for particular pairs of languages and generally incorporated only as much analysis of either language as was absolutely necessary to transform structures from the given source language (SL) into those of the given target language (TL). "Direct" approaches have typically been ad hoc, highly empirical, generally atheoretical, and relatively lacking in systematic semantic, or even syntactic, analysis.

More recent "indirect" systems, on the other hand, are (in design at least) characterized by more systematic syntactic and semantic analysis of both SL and TL, by the relative independence of SL analysis from
TL synthesis, and by the incorporation of a more or less abstract, intermediate level of representation—an "interlingua" or "metalanguage" of sorts—to which the SL may theoretically be reduced, and from which the TL may subsequently be synthesized.

Actually, as Hutchins (1978:130) notes, although concepts of universal grammar have a long history, even the most sophisticated system designs have been largely unsuccessful in implementing such ideas. In practice, most "indirect" systems have taken a somewhat more modest, three-stage approach consisting of (1) SL analysis, (2) SL-TL transfer, and (3) TL synthesis. In this approach, for any given language, the SL analysis is substantially the same regardless of the particular TL, and the TL synthesis for each language remains the same regardless of the particular SL, and only the SL-TL transfer component differs significantly according to the particular language pair.

I assume in general that there is a universal component of grammar, essentially semantic in nature, underlying all natural languages, and further assume (with Locke (1975:414-15) and others) that human translation of natural languages is not merely a linear replacement of SL words with TL words, but rather that it is an indirect process involving a common core of meaning at some nonsuperficial level. While an indirect "interlingua"-type MT system might more accurately reflect these general assumptions, I will also assume, for purposes of the following discussion, the rather more pragmatic Analysis-Transfer-Synthesis model of MT referred to briefly above. In any case, the nature of the analysis suggested below is not fundamentally altered on account of the simplification involved in this assumption.

Let us now return to the matter of the absence of articles in Japanese. In developing a Japanese-to-English MT or machine-assisted translation system, algorithms must be designed which insert appropriate articles into the English target text where required, based on information generated during analysis of the Japanese source text. This is a special case of a more general type of problem in MT; namely, that of inserting elements in the TL to which there are few, if any, distinctly identifiable corresponding forms in the SL. Other problems of this same general type in a Japanese-English system would include the insertion of appropriate pronouns in English corresponding to the commonly ellipsized (or "zero-pronominalized") subjects and objects of Japanese, the insertion of information necessary for number inflection in English based on clues in Japanese which are usually fragmentary at best, and so forth.

Given the general absence of unique forms in Japanese corresponding to English articles, a direct, one-to-one mapping approach to the problem is ruled out in principle. Instead, the assumption of a universal semantic base of some kind suggests the following general methodology: (1) on the basis of observation, hypothesize the primitive semantic notions underlying the use of articles (etc.) in various languages (here, we will be concerned only with English), (2) search for equivalent processes in languages which lack articles (i.e., for Japanese in this case, search for linguistic patterns expressing the hypothesized semantic primitives in the surface structure of Japanese), and (3) test the resulting mapping from SL (here, Japanese) surface structure to the universal base
(or, in our simplified model, through the transfer component) to TL (here, English) surface structure. One cannot realistically hope, in a paper of this brevity, to defend or to exemplify the entire process just outlined. Instead, an attempt will be made merely to give some idea of both the computational and the linguistic scope of the problem.

From a superficial, quantitative point of view, depending upon the ratio of actual to potential article occurrence in English target texts, at least two different general approaches may be suggested to the problem at hand. That is, in comparing Japanese source texts with their corresponding English translations, if the number of Japanese forms having English translations with actually occurring articles is a sufficiently high percentage of the total set of those forms whose translations may, in general, take articles depending upon the context, then it might well be argued that the more promising strategy would be to insert articles before every candidate form unless a given candidate could be ruled out on the basis of contextual analysis. This might be referred to as the insertion-default approach; i.e., when in doubt, insert the article.

If, on the other hand, the number of actually occurring articles is a relatively small proportion of the total number of potentially occurring articles, then the opposite approach would seem more promising: that is, insert articles nowhere unless a given candidate form could be shown, on the basis of contextual analysis, to require an article—the so-called noninsertion-default approach, or, when in doubt, leave it out.

Obviously, the matter becomes very much more complicated than this, but in order to get a little better quantitative feeling for which of the two general strategies mentioned above would be preferable, a small preliminary sample was taken, in which several pages of Japanese source text were compared with their corresponding English translations, and the number of articles was compared with the total number of forms that might, in general, have taken articles. Surprisingly, the ratio of actual to all potential occurrences of articles was less than 1:3, suggesting the preferability of the latter, or noninsertion-default approach.

To confirm this, a somewhat more formal sample was taken, in which the following hypotheses were tested:

Null Hypothesis: Proportion of actual to potential articles equal to or greater than 35%;

Alternate Hypothesis: Proportion of actual to potential articles less than 35%.

The sample proportion of actual to potential article occurrences was 596/1828, or approximately .326, which at a .05 significance level leads us to reject the null hypothesis (namely, that the population proportion of candidate forms actually occurring with an article in any given text is equal to or greater than 35%). Stated simply, if the data do indeed lead us to reject the null hypothesis, we are 95% certain that the number of forms requiring article insertion will amount to less than 35% of the total number of article-eligible forms in a given text.
Oversimplifying somewhat, the events of interest, along with their worst-case probabilities, may be represented in matrix form as follows:

<table>
<thead>
<tr>
<th>Article Required</th>
<th>Article Not Inserted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article Inserted</td>
<td>Correct (.35)</td>
</tr>
<tr>
<td></td>
<td>Error (.35)</td>
</tr>
<tr>
<td>Article Not Permitted</td>
<td>Error (.65)</td>
</tr>
<tr>
<td></td>
<td>Correct (.65)</td>
</tr>
</tbody>
</table>

Ignoring for the moment the problem of which article to insert ('a'(n)' or 'the'), if we could simply narrow down the number of eligible forms to which the default option must apply, then we might considerably improve the 65% minimum accuracy that would result from no article insertion at all. To a certain degree at least, this may be accomplished in two different ways: (1) by inserting articles where we are reasonably certain they are required, and (2) by blocking article insertion where we are reasonably certain they are not permitted.

By slightly revising the hypotheses given above, we can capture the idea of reducing the number of article-eligible forms with a concomitant reduction in the critical ratio of actual to potential article occurrence overall:

Null Hypothesis': Proportion of actual to potential articles (excluding forms which meet conditions x,y,z) equal to or greater than k%;

Alt. Hypothesis': Proportion of actual to potential articles (excluding forms which meet conditions x,y,z) less than k%;

where the term "conditions x,y,z" refers to those conditions under which it is possible with virtual certainty to instruct the computer correctly to insert an appropriate article where required or correctly to prevent it from inserting an article where not permitted (in effect, removing such forms from the domain of application of more probabilistic rules of article assignment).

As we correctly treat, and thus eliminate article-eligible forms from the proportion of actual to potential article occurrences (by virtue of conditions x,y,z), we realize a corresponding (though smaller) decrease in the percentage k at which it will still be possible to reject the null hypothesis. To take a simple example, if k = 35% and total potential article occurrences are equal to 100, the expected number of actual article occurrences (based on the foregoing) would be 35. If, however, we were able (using conditions x,y,z) to account explicitly for even only 40% of the potential article occurrences, the noninsertion default applied to the remaining 60 potential occurrences (.35 x 60 = 21) would yield an effective reduction in k from 35% to 21% overall (21/100 = .21). That is to say, if no articles are inserted except where explicitly required by conditions x,y,z, the maximum expected number of errors of the type "Article Not Inserted Where Required" might be reduced from 35% to 21%, resulting in an overall accuracy rate of nearly 80%.

17.4
The question that remains, of course, is "what are the conditions x,y,z,"? While it is not possible at present to give anything like an exhaustive specification of such conditions, I will attempt in the balance of this paper to describe briefly their nature and to give some indication as to how one might proceed, in general, to treat them within the context of Japanese-English MT.

As suggested at the outset, very little contrastive analysis has been done which sheds any light at all on the relationship of articles in English to any functionally analogous constructions that may exist in Japanese. Such references as have been made to the problem are usually incidental to discussions of the postpositions wa and ga in Japanese, the nature of themes, and so forth.5 In a general discussion of the nature of thematic noun phrases, for example, Kuno (1973:39 ff.) observes that, in order to qualify as a theme, a noun phrase (hereafter, NP) must have "some specific referent in the universe of discourse," but must also already have been referred to in the present or a previous discourse (i.e., must be in the "temporary registry" of discourse) or must already be part of the "permanent registry" of discourse reserved for nouns of unique reference like 'the sun', 'the moon', 'my wife', etc. The following example illustrates the initial entry of a NP ('a man') into the temporary registry of discourse where it serves as the antecedent of the anaphoric NP 'the man' in the very next sentence:

(1) a. My wife saw a man and a little boy picking flowers out of our garden this morning.
   b. The man was wearing a strange hat and an old, worn-out suit.

Since NPs in Japanese must generally be either anaphoric (in the extended sense above), generic, or contrastive in order to be marked with the postposition wa, and since in English the corresponding anaphoric and generic NPs generally require (or, as in the case of generic NPs, at least optionally permit) the definite article in the absence of any other overt determiners, it would be most convenient for MT if we could simply scan for wa-marked NPs and mark them for subsequent insertion of the definite article. (An analogous strategy is, in fact, often suggested in textbooks for native speakers of Japanese attempting to learn the obscurities of article usage in English.) In fact, in the texts sampled, virtually every occurrence of NP-wa involved definiteness (in the general sense).6

There are, however, cases of wa-marked NPs in Japanese corresponding to which the English NPs normally do not take a definite article; as, for example, in the contrastive environment shown in (2) below:

(2) a. pen ya enpitsu ga arimasu ka.
   pen and pencils NOM be/have ?
   'Do you have any pens and pencils?'

   b. pen wa arimasu ga, enpitsu wa arimasen yo.
   but CNTRST not be/have EMPH
   'I do have (some) pens, but I don't have (any) pencils.'
A further difficulty with the NPs in (2)b is that, while they have been mentioned previously in (2)a, they refer not to a specific object(s) but to a class of objects, and therefore are not anaphoric in the usual sense.

That the NP-wa scanning approach alone would be insufficient is further indicated by the fact that there are, of course, many NPs which are not marked with wa but which nevertheless require definite articles in the corresponding English NPs. Whether associated with wa-marking or not, anaphora is, to be sure, an extremely important factor in determining the requirements for article insertion in Japanese-English MT. Surprisingly, however, only about one third of the definite articles in the sample could be accounted for on the basis of anaphora in the narrow sense (that is, excluding those nouns which were not mentioned previously in the given text, but which are in the permanent registry, or the anaphoricity of which derives from a general understanding of the particular discourse setting). From a total of just over 1800 nouns, just over 400 occurred with a definite article, and only about one third of those were strictly text-anaphoric, which means in turn that fewer than 10% of the total number of article-eligible nouns could be expected to have definite articles assigned to them on the basis of strict text-anaphora alone. There are, of course, other conditions relating to definiteness and specificity, however.

The search for further conditions governing article insertion ultimately requires information from almost every level of analysis— from the lexical, phrase, subordinate and main clause levels, as well as from the discourse level, as required in the treatment of anaphora.

At the lexical level, for example, SL (Japanese) dictionary entries may be flagged to reflect information of the type mentioned above. That is, words in the permanent registry, like hi or taiyoo 'sun', tsuki 'moon', etc., might be flagged as "pre-definite" (or "probably definite," where the term "definite" is to be understood as a feature governing the syntactic requirement for the insertion of a definite article) and unless this status is revised during later stages of analysis, the default procedure during the transfer phase would be to insert the definite article preceding the TL equivalents of words so flagged.

Proper nouns, on the other hand, might be flagged at the lexical level as being "inherently definite" (or, with respect to the mechanical process of article insertion, "unmarked definite") and, therefore, as requiring no definite article unless, of course, subsequent analysis dictates otherwise. The sentences in (3) and (4) below exemplify the two cases just described. The noun tsuki (normally definite as in (3)a) is, in (3)b, reanalyzed at the phrase structure level as an indefinite, quantified expression, and so is transferred to English 'moon(s)' without the definite article. The proper noun Tanaka-san (normally "inherently definite" as in (4)a) is reanalyzed in (4)b as "definite" (i.e., as requiring subsequent article insertion) because of the relative clause modifying it.

(3) a. tsuki ga deta.
    moon NOM appeared
    'The moon has risen.'
b. dosei ni wa tsuki ga kokonotsu ijoo aru.
Saturn DAT THM moon NOM nine over be/have
'Saturn has more than (*the) nine moons.'

(4) a. Tanaka-san wa Shinjuku no chikaku ni sunde-imasu.
Tanaka-Mr. THM GEN near DAT live(s)
'(*The) Mr. Tanaka lives near Shinjuku.'

b. watakushi ga shitte-iru Tanaka-san wa Shinjuku no chikaku ni
I NOM know
sunde-imasu.
'The Mr. Tanaka (that) I know lives near Shinjuku.'

At the phrase and subordinate clause levels, there are several clues that may be appealed to as conditions governing the insertion or noninsertion of articles in the TL. The presence of determiners, quantifiers, certain kinds of adjectives, genitive NPs and relative clauses, together with information from the lexical level, will frequently be sufficient to force a decision as to whether or not an article should be inserted. Consider, for example, the following sentences:

(5) a. watakushi wa sono hon o yonda.
I THM that book ACC read
'I read that book.'

b. Kodomo ga sannin ita. (cf. also (3) b above)
child(ren) NOM three were
'There were three children.'

c. sono sannin no kodomo ni koinu o ageta.
those three GEN child(ren) DAT puppy ACC gave
'I gave those three children a puppy.'

d. yatto saigo no basu ga tsuita.
finally last GEN bus NOM arrived
'Finally the last bus arrived.'

e. Nihon no seifu wa kooshoo o tatta.
Japan GEN government THM negotiations ACC cut off
'The government of Japan (or, Japan's government) cut off negotiations.'

f. musuko ga kooen de atta shoonen wa kyoo mo mata kita.
son NOM park LOC met little boy THM today too again came
'The little boy that my son met at the park came again today.'

Nouns (such as hon 'book' in (5)a above) which are found during phrase structure analysis to be modified by a demonstrative (such as sono 'that') may be flagged at that point as "unmarked definite" (again, only in the sense of not requiring insertion of the definite article in the TL). Nouns (like kodomo 'child(ren)' in (5)b) modified by a quantifier (like sannin 'three') may generally be ruled out as "unmarked definite," unless further modified by a determiner (as in (5)c) or some other defining structure (such as a relative clause). Nouns modified by certain types
of adjectives (like saigo no 'last' in (5)d and saisho no 'first') which imply the existence of a unique referent(s) may safely be flagged as "definite," as may the objects of genitive nouns (e.g., seifu 'government' in (5)e). Alternatively, of course, the objects of genitive NPs may frequently be translated better in the form given in the parenthesized portion of the translation of (5)e (namely, 'Japan's government'), in which case the noun in question could safely be flagged "unmarked definite." Finally, nouns modified by relative clauses (as in (5)f) most frequently (though certainly not always) may be flagged as "definite." It may not, after all, be too much to hope that the probability of correctly flagging NPs with various types of modifiers as "definite," "indefinite," unmarked definite," etc., may be raised to a very high level indeed, by combining lexical, case-marking, phrase structure, discourse, and other information at different levels of analysis.

At the main clause level, in addition to analyzing the relationships between relative clauses and their head nouns, the relationships between verbs and their various arguments, etc., certain types of syntactic patterns tend to signal the introduction of new vs. old information, or vice-versa. In (6)a, for example, the typical existential pattern of (Locative NP - Subject NP ga - Existential Verb) strongly indicates that the ga-marked subject represents new information and should therefore be flagged as "indefinite" (i.e., as requiring the insertion of an indefinite article). The word teeburu 'table' in both (6)a and (6)b, on the other hand, can safely be considered syntactically "definite," since the principal NPs both in the locative phrases of existential sentences as well as in the antecedent clauses of cleft sentences generally represent old or presupposed information:

(6) a. teeburu no ue ni usagi ga imasu.
   table GEN top rabbit NOM be
   'On top of the table (there) is a "*the/*O) rabbit.'

   b. teeburu no ue ni iru no wa usagi desu.
      be PRO THM be
       'What is on top of the table is a rabbit.'

Finally, at the discourse level, it is possible to trace back through the NPs of preceding sentences in search of antecedents for potentially anaphoric NPs, but not without considerable costs in terms of both processing time and storage space. In our sample texts, most of the antecedents of the strictly text-anaphoric NPs occurred on an average of between five and six sentences previously. At an average of between three and four nouns per sentence, one can imagine the potential complications, even if one attempts to trace back only as far as the average distance to an antecedent. Fortunately, many (if, indeed, not most) NPs which might otherwise trigger an anaphoric trace may be eliminated at earlier stages of analysis by some of the kinds of conditions discussed above.

In conclusion, although Japanese lacks morphological articles as such, largely the same types of semantic information (anaphora, new vs. old information, genericity, specificity, etc.) that underlie article usage in English are grammaticalized in Japanese in a variety of (sometimes not so obvious) ways. We have seen that an analysis which hopes to capture that information in the form of conditions on article insertion
within a Japanese-English MT system must be integrated over virtually all levels of linguistic structure. Although there are many relevant questions that could not even be addressed, let alone resolved, in a paper of this kind, some definition has (hopefully, at least) been given to the problem of article insertion in a Japanese-English MT system, indicating in the process, perhaps, possible directions for further, more detailed research.

NOTES

* I would like to thank two of my colleagues in particular, Akira Kurahone and Kerry Wyckoff, for their useful comments and suggestions during the preparation of this paper. Of course, the usual exculpations apply.

1. See especially Bar-Hillel (1960) and (1971).

2. We will not enter into a discussion here concerning the possibility of interaction during the analysis to provide some of the information necessary to insert articles. There may be debatable benefits to such an approach from a commercial point of view, but it is relatively uninteresting from a theoretical point of view, if the theoretical objective is a completely explicit account of the relationship between English articles and forms or constructions bearing the same types of information in Japanese.

3. I am not assuming that all semantic primitives, whatever they may be, will necessarily be grammaticalized in all languages. Specific semantic distinctions made in one language in whatever form may be totally absent in some other language.

4. The sample texts were taken from Natsume Ōsēki's Kokoro (1952:7-22) and its English translation by Edwin McClellan (1957:1-15), and from Lafcadio Hearn's Kwaidan (1959:4-33) and its accompanying translation.

5. See especially Kuno (1972) and (1973) for a discussion of the now well-known distinction between "thematic" and "contrastive" uses of wa as opposed to the "neutral description" and "exhaustive listing" interpretations of ga-marked subject noun phrases.

6. Allowance must, of course, be made for the fact that certain nouns (proper nouns, nouns modified by demonstratives, etc.), although definite in some sense, are prevented from taking definite articles in the target text. The occurrence of NP-ga presents a more complex situation. Nearly 50% of the ga-marked subject NPs were definite in the general sense, but most of these were the subjects of subordinate clauses which are normally marked by ga regardless of whether they represent new or old information.

7. There is a rather nontrivial problem which concerns us here in that, as Kuno (1973:235) notes, there are apparently no phonological, morphological, or syntactic distinctions between restrictive and nonrestrictive relative clauses in Japanese. The dilemma is, of course, that (4)b can be translated either as it is in the text (with a restrictive reading) or as follows (in a nonrestrictive reading): 'Mr. Tanaka, whom I know,
lives near Shinjuku.' In the nonrestrictive reading, of course, the
definite article would be inappropriate with 'Mr. Tanaka.' A fairly
sophisticated semantic analysis is required here, one which goes beyond
the sentence level.

8. There are cases, of course, where sono is best translated as 'the', not
'that'. See Lyons (1977, vol. 2:646 ff.) for a discussion of the historical
and functional relationships between demonstratives and definite articles
in English.

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Good afternoon, ladies and gentlemen. You see on your schedules that Matt Ellsworth will now address the subject, "Interpretation: Magic, Myth, or Science?" That is only partially correct; I am Matt Ellsworth. But the perhaps unfounded paranoia of being sandwiched between translators and linguists leads me to suggest a change in stance and title—from the passive question to this direct statement, "Interpretation: The State of the Art." Allow me the satisfaction of supposing that I am telling you something new, and together we will examine the state of Interpretation as a profession and practice. We will also see its various modes and training techniques.

The famous composer, Schumann, left a bit of advice to his students to teach them humility. He wrote, "Beyond the mountains there live people, too." How appropriate it is, considering these words, that man's most humbling experiences, at any point in time or at any level of abstraction, are when he leaves the valleys, real or imaginary, into which he has fled for shelter, and finds himself with strangers, foreigners, or even worse! It is in such encounters that order is maintained and communication established thanks to the work of the interpreter. The voice of this specialist adds confidence to travellers and is accepted as truth by diplomats.

The interpreter is seldom seen, preferring to be thought of, perhaps, as omnipresent, as a voice between one's ears. It adds to his mystique. Like the good side of the Force, Obi Wan Kenobe, He is an invisible aid.

Parenthetically, I mention to the ladies present that when I use pronouns "he", "his", "him", etc., you may aptly substitute feminine equivalents, since the majority of professional interpreters are women. I, however, will continue with the pronouns to which I am accustomed, no doubt to the delight of the sociolinguists in the room.

So, how did the interpreter end up tucked away in a glass cage, wired for sound, after beginning in ancient times as a right-hand man of rulers and confidant of kings? The history, greatly simplified, goes like this: In the beginning, there was Summary Interpretation (also called Interpretation in the Summary Mode). Or, if you will—in the beginning were the words, and the words were uttered, and not everyone understood them, and so there was Summary Interpretation. This method allowed men to speak at will, halting only infrequently to permit the interpreter to give the general idea of what had been said. But this mode was faulty, relying too heavily on the human memory. We might correctly imagine that many persons—especially interpreters—lost their lives as a result of misunderstandings.
A modification was made; Interpreters began to take notes, and Consecutive Interpretation was born. After finding that speakers would not slow down enough to allow precise transcription, a form of pictographic shorthand was devised by each interpreter to help spark his memory when his turn at the podium arrived.

With the help of Stephen Garrard, a first-year student of Translation and Interpretation in Spanish at Brigham Young University, I will demonstrate the Consecutive Mode. Before doing so, I will mention that, professionally I am rusty, and that I am not familiar with what Steve is about to read, although I do know the topic. My nearly inevitable foibles will serve to illustrate the limitations of this mode. Steve—(At this point, Steve read two paragraphs in Spanish, and Mr. Ellsworth took the following notes on an overhead transparency for the audience to see. He then read his notes in English, giving an interpretation of what was read.)

Here is what they mean: Since language is a natural occurrence, it has undergone an evolution. Since the time of the Poema del Cid until the poets, Pablo Neruda and Octavio Paz, the Spanish language has developed through an infinity of cycles: geographical, historical, societal, and cultural. What worries many experts is the way that Spanish has been broken into numerous dialect groups, with the resulting changes in vocabulary, syntax, and mode of expression. This dialect movement, now underway in most Spanish-speaking countries, has reached a point where many fear that a Spaniard, a Colombian, a Chilean, and a Mexican will soon be unable to communicate because of the divergence of their linguistic systems.

This form still accounts for nearly 10% of all interpretation performed at international conferences, and allows personal contact between speaker and audience in bilingual situations. The speaker can express his entire message before yielding the microphone, which is helpful to the
interpreter, who is allowed to understand a complete thought or thesis, rather than being asked to transfer mere bits and pieces of thought. Speeches interpreted in this way are normally about five minutes in length, but may be much longer.

The constraints are obvious: the interpreter must completely understand the speaker, and the notes and symbols must be readily understood mnemonic devices or there will be losses in the transfer.

With the development of electronic aids—especially the microphone, the television, and the headphones—interpreters found new challenges. "What if ... ?," they thought. "What if all the waiting could be eliminated? What if we, through the miracle of electricity, could snatch a speaker's words as they leave his lips and transform them immediately into another language? No, that won't do! Our first duty is to transmit messages, and that would leave no time for understanding."

"Well then, what if we were to wait just a moment, and then begin? It would be marvelous! It would be ... why ... SIMULTANEOUS!" And so it was. Beginning with the Nuremberg War Trials, interpreters began to put aside their note pads, rely on preparation more than memory, and go directly to the heart of the matter—Interpretation at its best—in Simultaneous Mode. From there it spread to the U.N. and through that organization's many branches into all areas of international dealings.

"But, how is it done?" cried the critics and students.

"Word by word," supposed the delegates.

"They paraphrase," answered the translators.

These guesses were incorrect. The answer was and is this simple. When one speaks, he does not often pause to regroup his thoughts, but charges forward, confirming his stance as he goes, adapting tone and level to the stimulus of his audience, restricted in velocity only by vocabulary and his own sluggish articulatory organs.

In like manner, the interpreter who can train his mind to gather data from the speaker, in order to form the next sentence of his rendition, can speak as rapidly and as clearly as the originator, only in another language, following one thought behind. This bears repeating. Simultaneous Interpretation is performed by the interpreter who hears and understands the speaker, as a secondary task, and expresses the thoughts of the speaker, which have become his own, in another language. It is as easy as speaking, once the mental ability to accept as your own thoughts the words of another is developed.

This is the state of the art of interpretation. An interpreter prepares himself as would a ballerina, pianist, or professional athlete—through hours and hours of practice. He hones his mental abilities and accumulates useful vocabulary through practice and by using several accepted techniques. The first is called shadowing. You might call it parroting.
I am now giving you a demonstration of shadowing.* You see, this presentation is not memorized, nor am I using notes. It is on tape, and I am simply repeating what I hear. This teaches the student of interpretation that hearing and understanding are natural and can be accomplished while performing other tasks, manual or mental, such as numbering backward from 100 on paper, or copying written texts.

It is also the first step in the improvement of decalage, which is the gap left by the interpreter between the original speech and his rendition. If the speaker is choppy, and leaves gaps, the interpreter has an easy time. But if the speaker is incessantly changing speeds and tones, it becomes more difficult to fall behind. An accepted decalage is slightly over one phrase, allowing the absorption of a complete segment of thought before interpretation is carried out.

These two practices, decalage and shadowing, are later used by the student in bilingual practice, until a plateau is reached where normal, clear speech is interpreted into the student's native language without difficulty. Thereafter, continued practice with varying degrees of difficulty in accent, speed, vocabulary and level of speech completes the student's training...

This is the work and study of the modern interpreter. We thank you for your attention.

*To this point, Mr. Ellsworth was listening through an earphone to a cassette recorder before him on the podium. Here he removed the earphone plug from the recorder, allowing the audience to hear both him and the recording. Such parts will hereafter be underlined.
Imagine, if you will, a group of Spanish students, natives and non-natives, gathered around their professor in excited conversation. A nearby businessman, hearing them speaking in Spanish interrupts:

"Hey, do you guys speak Spanish?"

"Sí, como no." "Por supuesto." "Ya lo creo."

"Great! Listen, I'm going to be taking a trip through Latin America next month and I want to buy some special gifts for my family. I want to buy a purse for my wife, earrings for my daughter, and a light jacket for my son. So, first of all, how do you say purse?"

First native speaker: "Well, you call a purse a cartera."

Second native speaker: "No, a purse is a bolsa."

Third native speaker: "You have the gender wrong on that. It's not a bolsa; it's a bolso."

"Oh, I see. And if I want to buy some earrings for my daughter, how do I ask for earrings?"

First native speaker: "Earrings are aros."

Second native speaker: "No, you can call them either aretes or pendientes."

Third native speaker: "No, in my country they are called caravanas, although I have heard some of my friends say zarcillos."

"You guys are really helpful. For my teenage son I would like to buy a light jacket. Not a heavy coat, mind you, just a light jacket. How would you say that?"

First native speaker: "In my country that would be a chamarra."

Second native speaker: "Well actually, if it's just a light jacket, you would say campera."

Third native speaker: "I've always said chumpa, but my Colombian friend says chompa."

Returned missionary: "All of you guys are wrong. The best word is chaqueta."

"Maybe I will buy something else for my family. Could you just help me a little with some food. I really like grapefruit juice. How do I order grapefruit juice for breakfast?"
Half of the native speakers: "You just say jugo de toronja."

Other half of the native speakers: "No, in our countries you say exprimido de pomelo."

"Oh, I see. And if I want to order something special for dessert, say cake. How do I order a piece of cake in a restaurant?"

First native speaker, hesitating: "Well, I know how we say it in our country, but how do you say it in your country?"

"We say torta. But I know that in your country torta is not cake at all, but a sandwich that is made on a special roll..."

At this point, the college professor interjects himself into the conversation: "Really, the only thing you can do is to take a piece of paper and write down what the correct word is in each of the countries you visit. If you want to order cake you will have to choose from: pastel, torta, ponqué, queque, etc."

"Thanks again, guys, you've been a great help."

The above conversation illustrates the problems of trying to translate into the Spanish language, a truly rich and varied language which is spoken in more than 20 countries worldwide. This is the challenge that faces the Spanish Translation Department of The Church of Jesus Christ of Latter-day Saints as it attempts to prepare materials that will be acceptable in all of these different countries.

Overall, Spanish is a fairly unified language, considering the many countries in which it is spoken. This basic unity is manifest in Spanish grammar, particularly the verb system. In matters of grammar, the Academia Española, or the Spanish Academy of Letters, sets the rules, and all Spanish-speaking countries generally accept and follow these established rules. With minor exceptions, the verb system is constant throughout the Spanish-speaking world. A limited number of verbs have regionalistic meanings which make them invalid in certain areas, but the list is indeed short. However, when we come to nouns, particularly the names of the most common nouns—nouns describing food, clothing and the common and ordinary items of everyday life—we really run into trouble. Here we find marked regional differences, many of them due to historical and geographical separation, others derived from Indian influences.

Within the LDS Church, we confront additional problems: First, the influence of thousands of English dominant missionaries who have been preaching the gospel in Spanish-speaking countries over the past fifty to sixty years. They have added a definite anglicized religious vocabulary to the Spanish spoken by the members of our Church. Secondly, for us there exists an interesting and challenging vocabulary unique to Mormon culture.

How then does one solve the problem of translating terms like "purse," "earrings," "light jacket," "cake," "beans," "shoelaces," etc.? There
are several ways of approaching this problem, a few of which I will outline briefly here. One of the first is to say, "We will do it the Castillian way--after all Castillian is the only correct Spanish anyway." While some would argue in favor of such an assertion, it is certainly not the approach that has been taken by the great writers of Latin America. Furthermore, a very important consideration for us as a translation organization is: Who is our audience? How do we meet their needs? Ninety-five percent of our audience is Spanish American. If we were to translate in a purely Castillian Spanish, we would confuse a great many in our audience and do them a disservice.

A second approach to the problem would be to do it "my way"--that is, each writer or translator would use his own regionalistic idiom. Indeed, some authors do take the attitude "let the readers make do the best they can." Others, for reasons of literary fidelity, choose to reflect the local flavor and color of the speech of their region. However, a prime goal of our organization is to translate in the most universal and acceptable Spanish possible; therefore, we must discard this approach.

A very professional approach to the problem is that taken by the Reader's Digest Organization. They actually have two separate translation centers for the Spanish-speaking world. One of these is located in Mexico while the other is located in Spain. They are totally independent units, translating for their respective audiences as they see fit. In addition to this accommodation Selecciones in Mexico City occasionally regionalizes an article that presents specific problems, for example, articles dealing with food. A different translation, which reflects regional vocabulary, is prepared for Mexico and Central America, another for the Andean region, while still another is prepared for the southern countries of South America. This reflects a conscientious effort to regionalize the article so that it is acceptable to all readers. The solution is a very good one; however, it is an expensive solution and not one that is practical for our Church. Reader's Digest is a profit-making company, and it sells its magazines at a price which will provide a profit. If special accommodations have to be made in order to regionalize the vocabulary of a given quantity of articles each year, then that is built into the price structure of the magazine. Books and magazines produced by our Church are not designed to produce a profit when they are sold; in fact, nearly all of these publications are subsidized in one form or another so that the Spanish-language magazine or a typical Sunday School manual will be as inexpensive as possible.

What steps have been taken, then, by the LDS Church in order to produce its literature in the elusive "universally acceptable" Spanish? As the need for translation grew in various languages, translation offices were set up in the various missions of the LDS Church. French translations were made in France; Japanese translations were made in Japan, and Spanish translations were made in the headquarters of each individual Spanish mission. As the number of items translated increased and an annual curriculum was authorized in Spanish, two separate translation offices were established to meet the needs of the Spanish-speaking members of the Church. One of these was
centered in Salt Lake City, with the responsibility for Church correspondence, leadership materials, and other special assignments. However, the curriculum items of the Church were translated in Mexico, which was the Spanish-speaking country with the largest number of members.

This translation office did yeoman work, producing manuals for the various organizations of the Church, such as the Primary, the Young Men and Young Women organizations, the Relief Society and the Sunday School. As might be expected, the translations reflected the language spoken by the Mexican translators employed at that office. A typical example is that of chalk: chalk was translated regularly as "gis," a regionalistic term that was strange and consequently unacceptable to the majority of members living in other Hispanic countries. With increased growth of the Church in these countries, many complaints reached Church Headquarters saying that the curriculum manuals of the Church were too regionalistic, and that the regionalisms detracted from the content of these important books.

But, if you don't translate in Mexico, where do you translate? In Spain? In Colombia? In Argentina? Wouldn't the same complaints be made no matter where the Church curriculum items were translated? After much study and evaluation, it was decided to set up a single translation office in Salt Lake City that would employ translators from throughout the Spanish-speaking world with the commission to translate Church materials in an idiom that would be acceptable to all Spanish-speaking members, no matter where they lived. Whereas it might be impossible to translate into an elusive and non-existent universal Spanish, at least an honest effort could be made to translate all items into a neutral Spanish—that is, a Spanish that would be acceptable to all and yet would not reflect the specific regionalisms characteristic of any given country.

A very common occurrence in our department today is to hear a translator or a reviewer from one country go to another's door and ask: "How do you say this in your country?" Or, "If I say such and such, will the Mexicans understand it, or will the Argentines understand it?" Gradually our people have become conditioned to the point that they know the majority of the terms and constructions that are overly regionalistic, and they try to avoid these. When there is a doubt, a quick consultation with a translator from another area helps resolve the problem. Every Monday morning we have a staff meeting in which troublesome items that might be too regionalistic or too anglicized are discussed and resolved. Every effort is made to see that translations made by a Central American or Mexican are reviewed by someone from South America and vice-versa. Through this effort we are striving to achieve an acceptable level of neutrality.

When we encounter an item that has several different equivalents in Spanish, we look for the most universal or most basic of the various terms. A simple example is the word "chalk," referred to above. Although there are various regionalistic terms, everybody does understand the meaning of the term tiza; therefore, that is the term that we use. More problematical to translate are the words

19.4
"shoestring" and "cake," also referred to earlier. For cake we say pastel; although this term is not universally acceptable, it is the one that fits the needs of the majority of countries and is at least understood as a dessert in the rest.

There are other problems that are not as easy to resolve, particularly when we deal with foods and vegetables. In some cases we have no choice but to use two or more words separated by a slash. For example, if we are translating the word "beans," we feel it necessary to use frijoles for northern Spanish America, porotos for southern Spanish America, and either aluvias or judias for Spain. Sometimes the options are not clear cut, and it can nearly drive us crazy and cause us to lose a great deal of time dealing with these supposedly easy words. What, for example, is the best translation for lightbulb? Would you use foco, bombilla, bombillo, ampolleta, bombita, lamparilla, lamparita or some other term?

Perhaps the most difficult problem of all is that special terminology used within the LDS Church. A noted professor of linguistics confessed to me that he had to learn a whole new vocabulary when he became a convert to the LDS Church. In some cases we use unique terms; in others we place a distinct meaning upon a common term. Also, certain expressions which are commonplace in English, and which are very popular in LDS circles, may be quite difficult to render in other languages. Let's look at a few examples. A favorite word in leadership circles in and out of the Church is the word challenge. LDS missionaries and Church leaders are constantly bombarded with the need to challenge their investigators or membership to work toward a specific goal. The dictionary tells us that challenge is translated as desafiar or desafio; consequently, that is the word LDS people use.

The problem here is that the word challenge in Spanish maintains much of its basic medieval meaning—that of challenging a person's opinion, or challenging him to a duel. The word is much stronger in Spanish than it is in English and hence is inappropriate in many circumstances for either missionary work or leadership materials. A softer expression which may be used in the noun form but not as a verb is the word cometido. However, it falls short of achieving the same meaning as the English word "challenge". Therefore, in Spanish we have a word on one side that is too abrupt, yet the alternative is too soft; it does not carry all of the ramifications of the expression in English, and we are left with an interesting "challenge."

Another popular English word today in leadership circles is the term "follow up," as in "if you want the task performed correctly, you have to have proper follow up." Any Spanish equivalents for this term rather miss the mark. A few years ago I was in attendance in a district presidency-high council meeting in Puebla, Mexico. One of the officials was reading some instructions from a recent Church publication. He mentioned a term prosecución, with which I was unfamiliar, so I interrupted to ask the meaning of this expression. Not one person present understood the term prosecución as it was used in the manual. I looked at the paragraph and reconstructed it in English in my mind and came to the conclusion that it had to be a translation of our ever-popular phrase "follow up." To this day we

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have not found a more adequate translation for "follow up", and every
time we use the term prosecución, we wonder how many thousand members
will not understand what it means.

Let's turn to an example of a term that has been highly influenced by
the English. Suppose that you have just been named the Director for
Physical Facilities in Lima, Peru. You are being introduced to the
president of one of the largest construction firms in Lima. Your
fellow employee, corrupted through a long association with
English-speaking missionaries and officials of the Church from Salt
Lake City, who speak but little Spanish, introduces you as the
Director de Facilidades Físicas. You immediately perceive the blank
look or lack of comprehension on the face of your host, who is either
confused or intrigued concerning the nature of your responsibilities.
Director de Facilidades Físicas is a literal translation of the
English term; however, it does not convey in any way the same meaning
in Spanish as it does in English. The term which we currently use is
Director de Bienes Muebles e Inmuebles, an adequate term, but one
which sounds strange and totally unfamiliar to English dominant
missionaries and officials from Salt Lake City, who, therefore, do not
use it.

Another very specific problem we have wrestled with has been an
adequate interpretation of the term "divorce clearance." This is an
expression that has a specialized meaning in LDS circles. When
translating this term into a foreign language, it becomes very
difficult to maintain all of the ramifications understood in English.
Our eventual solution to that problem was a rather literal
translation, followed by a lengthy footnote which gives an explanation
of all that is involved in this particular process.

Though we have not solved all of the problems associated with
producing adequate translations which will be accepted in all areas
of the Spanish-speaking world, we do feel that we have made
significant progress and that our method is valid. Through a
system of checks and balances which involves consultations, reviews
by translators from a different part of the Spanish-speaking world
than the original translator, increased familiarity with basic
problem words, a glossary of special LDS terminology, and a constant
listening ear open to the suggestions and complaints of faithful
Spanish-speaking members of the Church throughout the world, we
are endeavoring to capture and cage that elusive animal--universal
or neutral Spanish.
NEITHER METAPHOR NOR SIMILE:
LEXICAL FIELD IMAGERY IN SHAKESPEAREAN TEXTS

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We are, of course, familiar with overt forms of imagery such as metaphor and simile; we are aware that many words which originated as literal descriptions have figurative use; A. H. King in Reading Through Shakespeare examines imagery he terms word-chains, words without the syntactical links necessary to give them a reasoned connection, but which enliven the metaphorical meaning of other words in a context. Frequently this interanimation involves words from a specific lexical field, and the terminology of a human activity such as religion, finance, or medicine.

1. The briefest form of lexical field imagery is a word link¹.

1.1. In Hamlet 2.02.209-211 Polonius says of Hamlet:

> How pregnant sometimes his replies are! a happiness that often madness hits on, which reason and (sanity) could not so prosperously be deliver’d of.²

One sense of pregnant and deliver’d of refers to argument, another to childbearing (see Appendix for documentation of senses).

1.2. Childbearing is again the lexical field in OTH 2.03.366-367 where Roderigo remarks to Iago

> I think the issue will be, I shall have so much experience for my pains;

issue and pains are the word links.

1.3. Barnardo says to Horatio in HAM 1.01.31-32

> And let us once again assail your ears, That are so fortified against our story.

assail and fortified both have military senses.

Word links are very common in Shakespeare’s plays, and, as may be seen from the example, cannot be considered fully formed images, though each word may have common literal and figurative senses.

2. Lexical field imagery involving three or more words from one lexical field form simple word chains.
2.1. Emilia says to Othello, OTH 4.02.11-12:

I durst, my lord, to wager she is honest;
Lay down my soul at stake.

wager, Lay down, and stake are from gambling.

2.2. Gertrude uses a simple word chain in HAM 4.05.110-111:

How cheerfully on the false trail they cry!
O, this is counter, you false Danish dogs!

false trail, counter, dogs refer to hunting with dogs.

2.3. A word chain may be shared between speakers, as in MAC 4.03.196-198, lines spoken by Macduff and Rosse:

Mac. or is it a fee-grief
Due to some single breast?

Rosse. No mind that's honest
But in it shares some woe,

fee-grief, due and shares are linked by the financial senses of the words.

2.4. In LR 4.07.56-58 Lear and Cordelia produce a religious word chain with their use of benediction, kneel, and pray:

Cor. O look upon me, sir,
And hold your hand in benediction o'er me
(No, sir,) you must not kneel.

Lear. Pray do not mock me.

2.5. When the word links or word chains are used by one person it may be difficult to determine whether the image is intentional. Frequently when a speaker's word chain is extended by another speaker, the lexical field imagery appears to be part of the rhetorical style, as in the exchange between Isabella and the Duke in MM 3.01.232-236:

Isa. What corruption in this life, that it will let this man live! But how out of this can she avail?

Duke. It is a rupture that you may easily heal; and the cure of it not only saves your brother, but keeps you from dishonor in doing it.

corruption, live, rupture, heal, cure, and save, have senses referring to the practice of medicine.
3. Complex word chains occur when a word in a word link or a simple chain interanimates in two senses, with a second word chain triggered by the second sense of that word, as in TMP 2.01.251-254:

We all were sea-swallowed, though some cast again
(And by that destiny) to perform an act
Whereof what's past is prologue, what to come
In yours and my discharge.

sea-swallow and cast are linked with the meaning of swallowing and regurgitation; cast, perform, act, prologue, and discharge are a word chain dealing with the theatre.

4. Lexical field imagery is related to sense play in that two senses of the words involved will usually be functioning.

In MM 2.01.23-26 stoop and tread function as descriptions of human action, but as terms referring to the behavior of bird are linked:

Ang. 'Tis very pregnant
The jewel that we find, we stoop and tak't
Because we see it; but what we do not see
We tread upon, and never think of it.

Since tread refers to the sexual behavior of birds, does that interanimate the sexual senses of pregnant and take in this play about bartering for sex?

This imagery may serve to subtly shape the background of a play, as in 1.3, where Barnardo, a soldier, uses assail and fortified.

It may be a restatement, or link with similar images elsewhere in the play, as in 1.1 (above), a childbearing image referring in some sense back thirty lines (184-5) to conception and conceive.

The imagery may serve to highlight the action on the stage, as in 2.4 (above), which is generally played so that Lear kneels, and the image of praying is before us as benediction, kneel and pray are spoken.

Lexical field imagery may also contradict a character's overt actions and intentions as in 4 (above), where Angelo's hypocrisy and lust are foreshadowed as he speaks of his own innocence.

Claudius's speech about Ophelia's madness reveals his own guilt in his brother's death--the brother he killed by pouring poison into his ears--and repeats imagery, and plot action occurring elsewhere in the play.

5. HAM 4.05.75-96

0, this is the poison of deep grief, it springs
All from her father's death--and now behold!
Gertrude, Gertrude,
When sorrows come, they come not single spies,
But in battalions: first, her father slain;
Next, your son gone, and he most violent author
Of his own just remove; the people muddied,
Thick and unwholesome in their thoughts and whispers
For good Polonius' death; and we have done but greenly
In hugger-mugger to inter him; poor Ophelia
Divided from herself and her fair judgment,
Without the which we are pictures, or mere beasts;
Last, and as much containing as all these,
Her brother is in secret come from France,
Feeds on this wonder, keeps himself in clouds,
And wants not buzzers to infect his ear
With pestilent speeches of his father's death,
Wherein necessity, of matter beggar'd,
Will nothing stick our person to arraign
In ear and ear. O my dear Gertrude, this,
Like to a murd'ring-piece, in many places
Gives me superfluous death.

Line 75 poison

Line 76 Her father's death--ultimately due to his own murdering of his brother.

Line 81 remove

Line 82 Thick and unwholesome--compare Hamlet Sr.'s account of his poisoning, HAM 1.05.65-72.


Line 90 infect his ear

Line 91 his father's death

Lines 93-94 our person to arraign/In ear and ear. Note in particular his insistence upon ear.

Military images occur to Claudius's paranoid mind. In his very first speech in the play, speaks of discretion fought with nature (1.02.5) and a defeated joy (line 10).

Here, we have spies (78)

Line 79 battalions

Line 79 slain

Line 80 violent
Equally characteristic of Claudius's state of mind is the series about spies (line 78).

Two minor chains illustrate Claudius's fear:

The other one is of insect pests:

The sexual word chains with which first scene of Measure for Measure is saturated undercut the integrity of Angelo, the Duke, and even Escalus, giving the tone for the rest of the play.

6.  I. 1. 16-21

(DUKE). What figure of us think you he will bear?

For you must know we have with special soul

Elected him our absence to supply,

Lent our terror, dress'd him with our love,

And given his deputation all the organs

Of our own pow'r. What think you of it?
11. 24-50

(DUKE) Look where he comes.

(ANG.) Always obedient to your Grace's will, I come to know your pleasure,

(DUKE) Angelo:

There is a kind of character in thy life,
That to th' observer doth thy history
Fully unfold. Thyself and thy belongings
Are not thine own so proper as to waste
Thyself upon thy virtues, they are not thee.

Sh (Lucr. 338; Sonn. 129.14) Heaven doth with us as we with torches do,
Not for them for themselves; for if our virtues
Did not forth of us, 'twere all alike
As if we had them not. Spirits are not finely touch'd
But to fine issues nor Nature never lends
The smallest scruple of her excellence,
But like a thrifty goddess, she determines
Herself the glory of a creditor,
Both thanks and use. But I do bend my speech
To one that can in him advertise.

Hold therefore, Angelo: In our remove be thou at full
Mortality and mercy in Vienna
Live in thy tongue and heart. Old Escalus,
Though first in question, is thy secondary.

Take thy commission.

(ANG.) Now, good my lord,
Let there by some more test made of my mettle
Before so noble and so great a figure
Be stamp'd upon it.

..........................
I shall desire you, sir, to give me leave to have free speech with you; and it concerns me to look into the bottom of my place. A pow'r I have, but of what strength and nature I am not yet instructed.

'Let us withdraw together, and we may soon our satisfaction have.

Touching that point.

I'll wait upon your honor.

Recognizing lexical field imagery may better help us understand how images are created, and help us to better establish the kinds of interpretations we give a character, a speech or a play.
NOTES

1. The terms are from Arthur Henry King, Reading Through Shakespeare, unpublished manuscript, Brigham Young University, pp. 267-279. I have drawn heavily on this source.


3. Key to superscripted references in the speeches:
Equivocal words are underlined with a solid line and references superscripted; those words which seem, in this context, to be equivocal, but are not established as such, are underlined with a broken line. References are not repeated for a word occurring more than once within a few lines.

Superscripted References are as follows:

A--The Arden Edition of Measure for Measure
F--Farmer and Henley's Slang and Its Analogues
Ham.--The Tragedy of Hamlet, Prince of Denmark
2H4--The Second Part of Henry the Fourth
LLL--Love's Labor Lost
Lucr.--The Rape of Lucrece
P--Eric Partridge's Shakespeare's Bawdy
O--Oxford English Dictionary
On--C. T. Onion's Shakespeare Glossary
Sh--Shakespeare
Sonn.--Sonnets
Troil.--The History of Troilus and Cressida

Unless otherwise noted, the word or one of its forms will be found in the cited reference according to alphabetical listings.
APPENDIX

1.1. pregnant = with child (1545); (pregnancy 1598; pregnancy 1548).
   deliver'd of = give birth. 2H4 2.02.90; ERR 1.01.54; TIT 5.03.120.
   delivered = give birth. OTH 1.03.370; WT 2.02.23; TIT 4.02.61; H8 5.01.162.

1.2. issue = child. OED 6.
   pains = labor pains.

1.3. assail = fig. OED 8.
   fortified = fig. cf. fortify. OED 7.

2.1. wager = bet.
   lay down = place a bet.
   stake = wager.

2.2. counter = wrong way on the scent. OED sb. 4 1.

2.3. shares = Cf. share. OED sb. 3 (1601).

2.5. corruption = OED 2. 3.
   rupture = OED 2 (1539).

3. cast = (1) regurgitate. OED 19; MM 3.01.92; H5 3.02.53; TIM 4.03.41; (2) actors. OED 26.
   discharge = play a part. MND 1.02.88-94; OED 1f.

   tread. OED 8. LLL 5.02.905.
REFERENCES


In order to acquaint more students with the masterpieces of world literature, language departments are offering an increasing number of literature classes in translation. Although these classes can be an exciting challenge, the instructor may approach them with some ambivalence. Even where the translations are good (as translations go) and the students demonstrate a positive response, one misses "das heilige Original," and may find oneself lamenting nostalgically with Goethe in the Faust "Zueignung": "Ihr Beifall selbst macht meinem Herzen bang." Nevertheless, Faust is excellent for such a course, and the situation is certainly not all negative. As a concept, "Faust" persists in the students' minds like Oedipus and Hamlet. Students come to the course convinced that the encounter will be an exciting one, and rightly so. There are cautions, however.

As teachers of literature in translation we soon become aware that each translation has its own peculiar problems. Faust is no exception, quite the contrary. And in addition to the normal problems one might expect in over twelve thousand lines of rhymed verse there is one particularly troublesome problem in all Faust translations which if not identified and understood can cause students to miss many important linguistic clues to an understanding of the text and miss, as well, much of the stylistic pleasure. This is the problem of the "missing echo."

Goethe's fondness for echoes, for the constant recurrence of thematic and symbolic words, is well known. That these echoes in Faust seldom occur in exact repeating patterns, but in kaleidoscopic variety, becomes evident as one studies the text. The more obvious of these passages seems to pose no difficulties beyond those normally encountered by translators when working with rhyming verse. Here, for example, is a well-known passage with which the translators have been relatively successful.

Gretchen, devastated emotionally and spiritually following the visit with Lieschen at the well turns to the Mater dolorosa to find sympathy for her sufferings (3587 ff.):

Ach neige,
Du Schmerzenreiche,
Dein Antlitz gnädig meiner Not!

Over eleven thousand lines later Gretchen again approaches Mary, the Mater gloriosa, and her prayer is now the antithetical joyful echo of her earlier sorrowful supplication (12069 ff.):

Neige, neige,
Du Ohnegleiche,
Du Strahlenreiche,
Dein Antlitz gnädig meinem Glück!

The appeal "neige" repeated in both cases, the echo of "Schmerzenreiche" as "Ohnegleiche," "Strahlenreiche," and the repetition of "Dein Antlitz

21.1
gnädig" with the shift of "meiner Not" to "meinem Glück" is all clearly intended to arouse in our ear and mind the linguistic-poetic relationship of the two passages. As one can see from the following English examples, the translators have identified this poetic relationship and have translated the echoing patterns with some skill. Lines 3587-89 compared with lines 12069-72:

Walter Arndt:

Incline,
Thou rich in grief, oh shine
Thy grace upon my wretchedness!

Incline
Thou past comparing,
Thou radiance bearing,
Thy grace upon my happiness.

Walter Kaufmann:

Incline,
Mother of pain,
Your face in grace to my despair.

Incline, incline
That art divine,
Thou that dost shine,
Thy face in grace to my sweet ecstasy!

Charles E. Passage:

O deign
Amid your pain
To look in mercy on my grief.

Deign, O deign,
Amid thy reign
In radiance,
To look in mercy on my joy.

George Madison Priest:

Oh, bend Thou,
Mother of Sorrows; send Thou
a look of pity on my pain.

Bend, oh bend now,
Matchless, attend Thou,
Thy radiance spend now,
Look upon my bliss in charity.

Bayard Taylor:

Incline, O Maiden,
Thou sorrow-laden,
Thy gracious countenance upon my pain!

Incline, O Maiden,
With Mercy laden,
In light unfading,
Thy gracious countenance upon my bliss!

21.2
It is not difficult to draw students' attention to the linguistic-poetic relationship of these two passages, even in the translations. As the passages expand from two to four (and more), however, the problems of translating become more complex, and consequently the echoes fainter. The difficulty lies in the fact that these echoing passages may be separated by hundreds or even thousands of lines, and the translators do not always maintain the echoing patterns of the rhyme as the text would force them to do, for example, if they were dealing with succeeding lines in a short lyric poem. Even after pointing out the thematic relationship of one passage to another, if the rhyming or linguistic echo is not present the students may still not fully appreciate either the problem or the structure. A good illustration is the sequence of thematic ideas deriving from Faust's confrontation with the Erdgeist, beginning at line 512, as the Erdgeist says to Faust:

Du gleichst dem Geist, den du begreifst,
Nicht mir!

An understanding of this passage is crucial at several points in the drama, and Goethe often gives us the necessary echoing clue. At line 623, for example, Faust is reflecting on the experience he has had with the Erdgeist and (rather hastily) concludes:

Nicht darf ich dir zu gleichen mich vermessen!

In the second act as Thales leads Homunculus to an audience with the misanthropic Nereus we hear Nereus' sarcastic comments on humankind, who are never satisfied to remain in their proper station (8096-97):

Gebilde, strebsam, Götter zu erreichen,
Und doch verdammt, sich immer selbst zu gleichen.

The echo of "gleichen" is heard once again in the final scene of the drama, this time suggesting a realization of the unity implicit in the words of the Erdgeist. The "Büsserin, sonst Gretchen genannt" says (12084-87):

Vom edlen Geisterchor umgeben,
Wird sich der Neue kaum gewahr,
Er ahnet kaum das frische Leben,
So gleicht er schon der heiligen Schar.

It is important to discuss the thematic significance of those sections in the text where the echoes occur, but these echoes are likely to be absent from the translation. The English translations of the lines quoted above read:

Close to the wraith you comprehend,
Not me!

No, I may not presume to be your equal:

Those artifacts, to godly likeness or one,
Yet sentenced to be ever but their own.

'Mid spirit choirs fresh life commencing,
The novice scarce regains his wit,
The heavenly host but dimly sensing,
Already he has merged with it.

In the German text the word "gleichen" is repeated as a significant echo, joining these four passages together into a reference of meaning.
The English translations of "gleichen" in these passages are: "close to," "equal," "their own," and "merged," which although adequate for the individual passages do not convey the same interrelated meaning, at least not in the same way. In each case the echoing key word is missing. Here, some linguistic explanation and a reading of the pertinent passages in German will be of significant help to the student confronting the text in English.

Finally, there is a more complex echoing pattern which can be vitally significant to an overall understanding of Goethe's Faust. This is a pattern in which the echo is heard frequently and throughout the text, building a subtle and at the same time more profound linguistic and poetic relationship of meaning.

The very important episode of the second Study scene in which Faust begins his translation of das Wort is an example of such a pattern. The sequence of Wort, Sinn, Kraft, and Tat is echoed throughout the text, but the echoing pattern is overlooked in most translations. This particular pattern, which is extremely complex, will require a more thorough treatment than the limits of this paper allow. I will conclude, rather, with another pattern, equally subtle and equally important, involving only a single word and consequently one easier to treat as an example with little commentary. This is the echoing pattern of the key symbolic word ewig.

When one looks closely at the text one finds that the concluding "Ewig-Weibliche" is not an isolated and unusual adjective-noun construction. "Ewig," as it turns out, is more ubiquitous than unusual, and the "Ewig-Weibliche" is the culmination of a long series of anticipatory constructions, which, with their echoing patterns, build toward the magnificent conclusion of the Chorus Mysticus. Once having seen this pattern it is not difficult to identify it for students reading the text in translation, provided constant reference is made to the German original.

The compounds of eternity begin early in the drama. During his first confrontation with Mephistopheles, Faust contrasts the eternal creative power with Mephistopheles' daemonic futility. Having quickly recognized the nihilistic ambitions of the "Geist der stets verneint," Faust says (1379 ff.):

So setzest du der ewig reaen,
Der heilsam schaffenden Gewalt
Die kalte Teufelsfaust entgegen,
Die sich vergebens tücksich ballt!4

The echo of ewig scattered through Part I increases in frequency throughout Part II. This linguistic key is directed against Mephistopheles in still another passage, this time by the chorus of Trojan women who recognize him in his most hideous disguise as the nihilistic antagonist to the creative and beautiful (8744 ff.):

Doch uns Sterbliche notigt, ach,
Leider trauriges Mißgeschick
Zu dem unsäglichen Augenschmerz,
Den das Verwerfliche, Ewig-Unselige
Schönheitliebenden rege macht.

21.4
Another of these compounds of eternity spoken also by the chorus of Trojan women anticiATES Mephistopheles' speech following Faust's death (11595 ff.), which echoes with the line, "Ich liebte mir dafür das Ewig-Leere." The Trojan women, directed to return to Hades, ask themselves (9117 ff.):

Blinkt nicht der goldne Stab
Heischend, gebietend uns wieder zurück
Zu dem unerfreulichen, grautagenden,
Ungreifbarer Gebilde wollen,
Überfüllten, ewig leeren Hades?

This comparison of Mephistopheles' "eternal emptiness" with the overfilled yet vacuous Hades to which they must return is an important echoing pattern, since in the speech of the Trojan women the powerful series of adjectives gives a vivid picture of the sterility of the anti-creative forces of Hades and consequently of the negative Mephistopheles himself.

From the time of Faust's death and Mephistopheles' expression of love for the "Ewig-Leere," the compounds of eternity begin to ring forth in a virtual chorus; never in symmetrical or exact patterns but, as is always Goethe's way, in continually varied and varying forms. And as these forms multiply in frequency and intensity toward the conclusion, we begin to understand more clearly the important time motif that is woven into the Faust drama, but now in relation to the timeless.

Throughout the "Grabeguna" and the "Bergschluchten" scenes, the echoes of "ewig" alternate between Mephistopheles, with his cacaphonic nihilistic satire, and the angelic hosts, until Mephistopheles is finally silenced. The varying echoes continue to build, however, culminating in the total harmony of the "Ewig-Weibliche." Following are further examples of this echoing pattern, which, as can be seen from the Table, are not present in the English translations.

Mephistopheles, commenting on the jaws of hell (11646-47):

Und in dem Siedequant des Hintergrundes
Sen' ich die Flammenstadt in ewiger Glut.

Mephistopheles, on the approach of the "Himmelische Heerschar" (11697-98):

Hier zu verlieren, wär' euch ew'ge Schande;
Ans Grab heran und haltet fest am Rande!

Chorus of Angels, strewing the roses (11731-34):

Worte, die wahren,
Äther im Klaren,
Ewigen Scharen
Überall Tag!

Mephistopheles, perverting his feeling of love into a pederastic attraction, with ironic mockery (11789-91):

Fürwahr, der Ernste steht euch recht schon;
Doch möcht' ich euch nur einmal lächeln sehn!
Das wär' mir ein ewiges Entzücken.

Following the departure of Mephistopheles, the eternal compounds are extremely positive in nature in preparation for the final song of the Mystical Chorus.

21.5
Pater Ecstaticus (11854 and 11862 ff):
Ewiger Wonnebrand,
Glühendes Liebeband,
Siedender Schmerz der Brust,
Schäumende Gotteslust....
Daß ja das Nichtige
Alles verflüchtige,
Glänze der Dauerstern,
Ewiger Liebe Kern.

Pater Profundis (11882-83):
Sind Liebesboten, sie verkünden,
Was ewig schaffend uns umwallt.

Pater Seraphicus (11918 ff):
Steigt hinan zu höherm Kreise,
Wachset immer unvermerkt,
Wie, nach ewig reiner Weise,
Gottes Gegenwart verstärkt.
Denn das ist der Geister Nahrung,
Die im freisten Äther waltet:
Ewigen Liebens Offenbarung,
Die zur Seligkeit entfaltet.

Die vollendeten Engel (11958 ff.):
Wenn starke Geisteskraft
Die Elemente
An sich herangerafft,
Kein Engel trennte
Geeinte Zwienatur
Der innigen beiden,
Die ewige Liebe nur
Vermag's zu scheiden.

Chor der Büsserinnen (12032 ff.):
Du schwebst zu Höhen
Der ewigen Reiche,
Vernimm das Fliehen
Du Ohnegleiche,
Du Gnadenreiche!

All of which culminates both thematically and linguistically in the Chorus Mysticus
(12104 ff.):
Alles Vergängliche
Ist nur ein Gleichnis;
Das Unzulängliche,
Hier wird's Ereignis;
Das Unbeschreibliche,
Hier ist's getan;
Das Ewig-Weibliche
Zieht uns hinan.

Translations can hinder the students from complete enjoyment of the linguistic echoes Goethe so carefully provided for an understanding and appreciation of the drama, but with careful guidance and constant textual and oral reference to the original, the beauty and significance of Goethe's Faust will not be lost.
Notes

1 The German text quoted throughout is the Goethes Werke, Band III, edited by Erich Trunz (Hamburg: Christian Wegner Verlag, 1960).


3 For comparison only the Walter Arndt translation is used here as an example of a common problem.

4 To avoid interrupting the text with English examples, the Table following is provided for a comparative reference to the German passages cited.
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21.8
A FUNCTIONAL HIERARCHY BETWEEN SPOKEN AND WRITTEN LANGUAGE IN THE APPLICATION OF THE LAW

by Pearl Berteaux
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It is difficult to make an adequate assessment of the mutual relationship of spoken and written language without considering some functional justifications for the existence of written language alongside of and apart from spoken language. There are certain situations for which one or the other will best serve the communicative needs of the community and its members. In this treatise, by using examples from Law, I will discredit the ideology which asserts inferior status to written utterances as opposed to their spoken counterparts.

Formerly, noted linguists have not held that written language be viewed as a system in its own right. During the last half of the nineteenth century and the first few decades of the twentieth century there was an absolute feeling for the autonomy of spoken language. Saussure's (1916:45) statement in Course in General Linguistics typifies his fellow linguists and his predecessors; "language and writing are two distinct systems of signs, the second exists for the sole purpose of representing the first." Even Bloomfield (1933:86) asserts that "writing is not language but merely a way of recording language by means of visible marks." Sapir also relates written language to an index so that the "written forms" serve only as "secondary symbols of the spoken ones." (Sapir 1921:19) Charles Hockett was likewise opposed to the written forms as independent, suggesting that "speech and writing are merely two different manifestations of something fundamentally the same." (Hockett 1958:4) This entire era of American linguistics reflects an overwhelming acceptance of the superior status of spoken utterances.

Acknowledging the existence of a "written norm" as well as a "spoken norm (whose existence has never been doubted)" is important in cultural communities where admittedly the users switch from one medium to the other. Obviously when the means supplied by one is switched to the other, each has its functional justification. Recognizing the functions performed by each will provide the basis for the hierarchical evaluation of their mutual relationship.

Prague linguist Josef Vachek (1959:10) names some functional terms in the hierarchy as "surveyability" and "preservability" and as an example:
Let us imagine a spoken utterance presenting a lecture which takes exactly one hour to deliver: a written utterance corresponding to it is a short paper comprising some 7 to 8 pages. The information supplied by the lecture and by the paper is virtually identical. There is, however, one important difference in the way in which the concerned information may be obtained from the two sources. In listening to the lecture, the person obtaining the information is bound to follow the speaker step by step, and under normal conditions it is
virtually impossible for that person to check any of the previous points of the speaker's arguments by having their wordings presented again by the speaker. Likewise it is impossible to 'skip' some of the passages to come and to get hold of the speaker's conclusions before he has worked out his way to them through a jungle of arguments and counter-arguments. Whether the listening person likes it or not, he is bound to follow the speaker's rate of developing the theme; one might also say that he is the speaker's fellow prisoner within the dimension of time. Clearly the reading person, unlike the listening person, is fairly independent of the dimension of time. The conclusion that inevitably follows is that, as far as quickness and distinctness are concerned, written utterances really rank much higher that their spoken counterparts. (Vachek 1959:10)

The important fact here is that texts can be preserved and re-read whereas spoken utterances are immediate and readily available for use in communication. Another fact which exists of these two norms is that the language user will always 'find it necessary to use one of the two norms in extralinguistic situations and the one used will be much more adequate than the other, and perhaps the only way to use the medium for that certain situation. Again an example; while riding bicycles a couple talk about their financial status and how they will divide the incoming money among the bills that are due. They surely have no recourse at that particular time to use a pencil and paper to calculate the bill with the amount due nor to write a note to the phone company who has sent them the same bill for the past two months. The couple are consigned in this situation to verbalizing. Without the written norm, the same couple could not be billed for their phone bill. A written norm is needed so Congress can keep account of meetings and bills passed. We all need to sign our name on some written document sometime in our life. Our educational system is based on an ability to read and write. The spoken norm would not adequately serve the advanced cultural community without writing and thus cannot really be considered inferior. Vachek calls it a "kind of superstructure built up on the basis provided by its unmarked counterpart: which cannot be quite satisfactorily handled by the corresponding unmarked (spoken) form." (1959:13) We can see then that the hierarchical relationship is not one of subordination or superordination but coordination "in terms of more general or more specialized applicability." (1959:13)

The following definitions of Vachek give the normative characteristics of each mode in the language dichotomy based on function. The spoken norm of language is:

a system of phonically manifestable language elements whose function is to react to a given stimulus (which, as a rule, is an urgent one) in a dynamic way, i.e. in a ready and immediate manner, duly expressing not only the purely communicative but also the emotional aspect of the approach of the reacting language user.

and the written norm is defined as:

a system of graphically manifestable language elements whose
function is to react to a given stimulus (which, as a rule, is not an urgent one) in a static way, i.e. in a preservable and easily surveyable manner, concentrating particularly on the purely communicative aspect of the approach of the reacting language user.

From these definitions we can observe the expressive ability that spoken language has to convey emotion. This is a functional feature of speaking that writing only has a secondary means of expressing, namely by descriptive phrases to correspond with the primary means found in the spoken norm. Spoken utterances may intensify stress or speed up the rate of speech while written utterances must do something like: "She asked bitterly" or "He cried out decidedly in a voice of supreme authority" to convey similar messages. Where the expression of the emotional component part is not important to the communication the written utterance becomes less wordy (which seems to be a goal of writing).

Since these norms are only valid when actually serving communication needs in the community I will use the application of the Law, through an examination of the Parol Evidence Rule and the Statute of Frauds, to show that the hierarchic relation of speaking and writing is "in terms of more general or more specialized" and not in terms of inferior or superior status.

The word "parol" means word of mouth or reference specifically to speech. The evidence of the parol is the writing. "There is a rule of substantive law which states that whenever contractual intent is sought to be ascertained from among several expressions of the parties, an earlier tentative expression will be rejected in favor of a later expression that is final. More simply stated, the contract made by the parties supersedes tentative terms discussed in earlier negotiations. Consequently, in determining the content of the contract, the earlier tentative agreements and negotiations are irrelevant." (Contracts, 2nd ed, Calamari & Perillo) The key to this rule of law is the contract that the parties intend to bind themselves to. The law clearly rejects the oral agreements without their being written into a contract. Not only must there be that writing but it necessarily needs to be final and complete. When the "last expression is not in writing the jury determines whether the parties intended the second expression to supersede the first." (Calamari & Perillo p.100) The intention of the parties stems from their oral interactions, which, in the absence of fraud, duress, and mutual mistake are never brought to trial. It is when fraud, deceit and contradiction enter oral agreements that the parol is required to be evidenced by a writing and until it is decided that there is a contract the Parol Evidence Rule does not apply.

In terms of the more general use, a parol which is unevidenced will get the job done for the parties or in other words they may agree upon anything; however, in the future of that agreement, should a disagreement arise, the proof of the parol is in the same medium--one person's word against another's. The means of taking that statement or agreement into the future as it was agreed upon in the past is to contract it in writing. Because the parol itself is ephemeral it would be hard to remem-

22.3
ber exact statements made in the past without their being preserved in some manner. A possibility for preserving the statements would be through a sound recording which could be witnessed but I foresee no way to eliminate fraud without a writing to verify the sound recording or parol. Whether or not sound recordings are viable means for eliminating fraud is not the only reason to consider such a recording but that it could serve the same purpose as the writing: to make a precise agreement and release it from the actual moment it was agreed upon (for future reference). I suppose that originally written language came to be because of the necessity for being released from the dimensions of time and place in communications. Written language also "usually possesses a wider vocabulary range, is more premeditated and precise, and is governed by stricter rules of grammar and style." (Rosenthal 1977:46)

A contract is also required in the Statute of Frauds but, unlike the Parol Evidence Rule, must be signed by the party to be charged. Simply stated, the Statute of Frauds says that for certain kinds of contracts, there must be a writing to enforce the contract that must be signed by at least one party (the one to be charged for its performance or sale). The three kinds of contracts are: 1) agreements for the sale of land or of interests in land, 2) agreements for the sale of goods over $500 and 3) contracts that are not to be performed within one year's time.

For this established rule dealing with fraud the writing requirement in large part effectively prevents perjury. Any agreement that is reduced to writing becomes clear and promotes certainty. False testimonies evolve from inabilities to recall exact wordings also from decaying morals. Rabel (1947) says that the required formality of a writing "promotes deliberation, seriousness,...and shows that the act was a genuine act of volition."

The relationship between the Parol Evidence Rule and the Statute of Frauds is in the integration of the writing or contract and whether the writing is complete and final as agreed upon by the parties. If the writing is final and complete it cannot be varied, contradicted or supplemented to show that it is inaccurate. That both rules give an absolute autonomous status to the written norm because of its function in the circumstances associated with the rules proves a hierarchy of the language dichotomy (where only function dictates autonomy).

Now, to conclude this study I can point out that, first of all, in the application of the Parol Evidence Rule and the Statute of Frauds, communicative needs dictate the strict use of the more marked medium (writing) because it behaves (functions) so as to preserve and easily survey past agreements which have come under disagreement by one of the parties. Secondly, if functional justifications exist for the use of one medium in place of another then neither is inferior nor superior but only lacking in ability to function well where the other functions better. And lastly, in any extralinguistic situation where one medium may seem to usurp itself over the other it should be considered as safe evidence of the autonomous status of each of the norms in the language dichotomy.
BIBLIOGRAPHY


Glossaries for Missionaries

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The oldest known, written document in what has become present-day German is Der Abrogans. It was written in the latter part of the 8th century in one of the monasteries in central or southern Germany (probably Fulda). It is an alphabetical, late Latin glossary of synonyms and received its name from its first entry: abrogans 'demütig, humble.' It is only one of many glossaries prepared by monks who were christianizing the Germanic tribes. With few exceptions, the literary documents of the Old High German period originated in the scriptoria of the monasteries. Since much of their activity consisted of recasting Latin into German, the scribes were constantly searching for suitable German words or expressions to use in translating Latin. The more common practice was simply to jot down the German equivalent some place on the page containing the Latin text, usually over the word or in the margin to one side. This resulted in more than four thousand pages of interlinear, marginal and other glosses stemming from the Old High German period when the Latin church was teaching the Germanic tribes the basic tenants of Christianity and at the same time the rudiments of writing (See John T. Waterman, A History of the German Language, University of Washington Press: Seattle, 1966,73-75).

If we look in the section on theology in Peter Kühn's systematic description of German dictionaries (Deutsche Wörterbücher, Niemeyer: Tübingen, 1978, 266 pp.), we find 45 entries of monolingual dictionaries. They range from the Wörterbuch der Religion of 1848 to Melzer's Der christliche Wörterb歳t der deutschen Sprache of 1951. There were no multilingual entries. This of course does not mean that they never existed, but it does mean that they never appeared as significant collections in print. It does serve to point out the fact that very little has been done in the way of glossaries for missionaries since the introduction of Christianity into the German-speaking areas by the Catholic missionaries of the 9th century. What has been done consists of multivolume bible dictionaries and lexica intended for theological seminaries and not for proselyting missionaries.

Paul Tillich's lectures on theological German at Union Theological Seminary and at Princeton, Yale and Drew universities in the fifties did spark an interest in Walter M. Mosse, who in 1955 published A Theological German Vocabulary (Macmillan: New York, 1955, 148 pp.). It contains some 3,000 German theological key words (der Erlöser, die Dreieinigkeit, die Mischehe, der Mormone) illustrated in quotations from the Luther Bible and the Revised Standard Version. It too was intended more for students of theology than for missionaries.

The next work to which I will refer is described in a note in Dialog 1, No. 2 (1966):133. The section on recently received publications has the following:

Written by a returned missionary, this volume attempts to bridge the gap between common terms found in the regular English-German dictionary and the needs of Mormon missionaries in German speaking lands and converts wishing to comprehend L.D.S. literature. Already in use at the Language Training Mission at Brigham Young University, this successful work will hopefully be followed by similar efforts in other languages. There will be more understanding on Sunday when the German Saints gather at die Priesterchaftsversammlung with Brother Snow's dictionary in hand.

In the first presentation of this paper, I noted that I had not been able to locate a copy of the work or even verify that it actually was printed and in use at the Language Training Mission. I noted further that it was never reviewed in a subsequent issue of Dialog as promised in a footnote to the first notice, even though it was mentioned in the introduction to the very interesting article by the same author ("Translating Mormon Thought," Dialog, Nr. 2 (1967):49-62). Parenthetically, I invited anyone who might know more about it to get in touch with me. This appeal prompted Eric Olson, who remembered having seen it, to leave a note on my desk. It contained the call number (Americana M203 Sn 61e) to a copy in the special collections in the Brigham Young University library.

This small volume (approximately 4" x 5") contains ca. 4,000 words of the following kinds: 1) exclusively L. D. S. terms (Pearl of Great Price), 2) words with special L. D. S. meanings (endowment, garment), 3) general religious words (baptism, faith), 4) scriptural names, places, events and objects (ark of the covenant, John the Baptist, 5) words from other religions (Jehova's Witness, and 6) a great many words with no immediate relationship to religion (study, happiness, visit).

In its own right, it is a tribute to individual initiative and in my opinion is well conceived as to format and size and it does contain a great deal of information of use to the missionary. I believe there are many words beyond the grasp of the average missionary (intercede, irrationality, monasticism, transubstantiation, etc.) and that the spectrum of items included is too broad. References to the Luther translation are to the edition of 1912. This results in some archaic terms. For instance, for jubilee the 1912 edition has 'Halljahr' whereas the 1964 edition has 'Erlaßjahr.' The Einheitsübersetzung has Jubeljahr. I believe its more serious drawback is that it is not frequency based, a notion to which I will return later.

Those of you who know German noted that the distinction in the description between das Priestertum 'Amt, Würde, Stand des Priesters, priestly office, authority' and die Priesterchaft 'Gesamtheit von Priestern, priesthood, clergy' has been lost. The notice referred to the Priesterchafts- versammlung whereas we are now informed in the glossary prepared by the translation department (see below), that we are to use Priestertums- and not Priesterschafts- in this compound. The entry in Snow's dictionary also has this distinction.

Many other missionaries and translators must have had their word lists but they never made it into print or were otherwise lost. Further
search among the archives of the Church and the materials used by missionaries and translators may reveal other glossaries prepared by missionaries as they were proselyting or translating into German.

I have been able to find three fairly recent word lists published by the Church. The first, entitled Word List 1971, is a 58 page booklet (Copy no. 0068), presumably published by the Church Translation Department in Frankfurt. It contains some 1400 English words and phrases with their German equivalents. More than 90% of them are organizational terms ranging from 'average attendance' (durchschnittliche Anwesenheit) and 'balance on hand' (Saldoabzug) to 'brainstorming' (Ideensturm) and 'sego lily' (Mormonentulpe). The few theological words (between 5 and 10%) include equivalents for 'celestial marriage' (die ewige Ehe), 'the Only Begotten' (der Einziggezeugte), 'gentiles (non-Mormon)' (Andersgläubige, Nichtmormonen, Nichtisraeliten, Nichtjuden, andere Völker), and 'natural man' (natürlicher Mensch). (To my knowledge, this last gloss has not found its way into any of the translations of the L.D.S. scriptures). The basically organizational nature of this list makes it only of limited use for missionaries.

The second is the LDS International Glossary Guidelines for Intercultural Writers, Adapters, Translators and Communicators published by the Church (Salt Lake City, Utah, 1973, revised 1974, 162 pp., PX TR 0178 GE). From its format, it is evident, that the basic list was first prepared and printed in English. The foreign language equivalents were then added and the new bilingual list was printed. According to the introduction, it contains (1315 entries of) "basic organisational terms, church history terms, and terms having a shade of meaning somewhat different in church usage."

The third word list, simply labeled German Word List, looks to be computer generated. It contains approximately 2300 words. Based on a preliminary examination of the similarities and differences, this third list seems to be a collation of the two lists described above with the exception that there are no English definitions for some of the more difficult words.

With the exception of the Old High German glosses, the only one of the glossaries described so far that offers much that is useful to young Mormon missionaries currently entering the Missionary Training Center is the work by Snow. The reason that it was not reprinted may be related to the shortcomings listed above or perhaps to the fact that it did not have an institutional sponsor. In any event, it is regrettable that it did not make its way into the hands of more missionaries.

Let me now turn to an innovative development which does have an institutional sponsor. It is the paperback, pocket Navajo Dictionary for Missionaries (Provo: Brigham Young University Publications, 1979, 116 pp.). It contains about 2,000 English words with their equivalents in Navajo. The introduction notes that most of them are found in Young and Morgan's The Navaho Language. It also has an extra mile section of approximately 250 words most of which are not found in Young and Morgan. Since it deals with a language and culture very different from our own, we might expect it to have many items not in similar glossaries for
other languages. It contains large numbers of words for animals (antelope, badger, mouse, mosquito, grasshopper and giraffe) and for parts and activities associated with the human body (eyebrow, eyelash, eyelid, heartburn, urinate, vomit). I also counted some 35 Navajo equivalents for place names of the Southwest. Missing were such gospel terms as resurrection, atoning sacrifice, bishop, quorum, restoration, ordain, celestial, etc.). It might very well be that such a glossary should include the items noted above. However, since it was prepared for use by missionaries, it might also have included the gospel words as well, even though they are in the text and discussions used by the missionaries.

Let me recapitulate: 1) missionaries who speak one language and wish to proselyte in another need glossaries from the target language into the source language and from the source language into the target language, 2) theological dictionaries and lexica and other similar works do not meet the needs of proselyting missionaries, 3) glossaries prepared by the Church translation department are mostly organisational and likewise provide little that is useful for missionaries, 4) an English-German glossary for missionaries was completed but lacked in institutional sponsor, 5) an English-Navajo glossary has been compiled and is in use but it includes many extraneous terms and lacks many basic gospel words.

Language teachers interested in reducing the learner's task at the beginning level have generated word frequency lists. In an attempt to arrive at a minimal consensus, I have combined the various frequency lists of German into what I call the German core vocabulary. It contains the words that are listed in all four or three of the four frequency counts examined by H. M. Sommer in his dissertation (A Comparison of the Vocabularies of Hörspiele, Short Stories, Newspapers and Spoken German, University of Georgia, 1972). It includes his own study of Hörspiele, the studies of Preller and Zimmermann on the short story, Swenson's study of newspaper German and Pfeffer's study of spoken German. To these were added all the words that are in all six frequency lists collated by Wolf Dieter Ortman in his Hochfrequent deutsche Wortformen III (Goethe Institut: München, 1979). In addition to the Pfeffer's study included by Sommer, Ortman's study includes the vocabulary counts of Michea, Uhler, Wängler, Zertifikat Deutsch als Fremdsprache and Kaeding. To this base derived from the various frequency counts were added the words that were in the vocabularies of nine of the twelve recent popular beginning German texts examined by Marjorie Tussing and Jon Zimmermann, "Vocabulary in First-year German Texts," UP Nr. 2 (1977):65-73. The result is a core vocabulary of 790 words. It is presently in machine-readable form awaiting final arrangements for its publication as an inexpensive, paperback dictionary for students of beginning German.

A second project which I believe is more directly applicable to missionary needs is that done by James Nielson. He prepared a word frequency list of missionary German. He used the eight missionary discussions, the general church book (Grundsätze des Evangeliums, Frankfurt, 1978 PB IC 0245 GE) and a brochure by Enzio Busche (Licht breitet sich aus). The corpus consisted of about 70,000 running words and 3887 different words.
I want to turn next to a comparison of the core vocabulary with the gospel words in Nielson's study. Let me preface the comparison by referring to Sommer's conclusion after examining the various frequency counts.

The most obvious conclusion that can be drawn is that each list constitutes a rather distinct vocabulary. Knowledge of one will have limited value for others. On the average, over 30% of the words on one list were not on any of the others. (Sommer, p. 61)

When we examine the gospel vocabulary of German we should expect to find that about one-third of the words are not on the other list. Now to the results of the comparison. There were 412 of the first 789 words in the Nielson list that were not in the core vocabulary. That amounts to 52%, or about 20% greater than the differences noted by Sommer. I am sure the small number of items compared affected the statistics somewhat but we can be assured that the difference is on the order of magnitude of at least one-third. Surely, the vast difference between typical spoken language and gospel language is of a magnitude as to require us to provide specific language aids to help bridge the gap and overcome the deficiencies in standard commercial dictionaries.

In order to get an idea of how useful a standard pocket dictionary might be to the missionary, I looked up the most frequent gospel words in Nielson's study in Collins Gem German-English, English-German Dictionary (London, 1978). It is a small, pocket dictionary containing "over 46,000 references" and is the one most recommended and most used by the missionaries. Twelve were not listed: das Priestertum, die Schrift, der Sabbat, auferstehen, das Sühnopfer, ordnieren, vorirdisch, die Vision, celestial, das Millenium, die Schriftstelle, das Erdenleben. For sixteen additional items, the standard Mormon definition was not listed. For die Buße it lists 'atonement, penance, and fine' but not 'repentance.' For das Abendmahl it lists 'Holy Communion.' For die Gemeinde it has 'district, community, congregation, parish' but not 'ward.' For seven nouns the meaning had to be derived from the verb: die Verheißung from verheißen and der Erlöser from erlösen. Overall, we can say that in about 25% of the cases the pocket dictionary is not helpful when used in looking up gospel terms. This certainly is not critical; after all, missionaries have been getting along in spite of such inadequacies for years.

I also looked up the English equivalent of the same gospel words in the English-German section of the same dictionary. The results were similar. 'Covenant, celestial' and 'terrestrial' were missing. There were eight definitions for 'call' but not the religious word used in German (berufen). For our 'ward' there was the hospital meaning 'Station' and the legal meaning 'Mündel' but not the standard Mormon German word Gemeinde. Likewise Sakrament was listed for 'sacrament' but the standard word Abendmahl was missing. Weihen and verfügen were listed for 'ordain' but not ordnieren. Reue is listed for 'repentance' but not Buße and Priesteramt is listed for 'priesthood' but not Priestertum. Again we must conclude that in about 25% of the cases, the standard commercial dictionary is not adequate.
Let me turn now to some suggestions for meeting these deficiencies. We can, I believe, make a profile of the lexical needs of the missionary and take steps to meet them, at least better than they have been in the past. I believe such a profile would include the following: 1) the most frequent words of the spoken language (i.e., the core vocabulary consisting of somewhere between 800 and 1200 words depending mostly on how large the glossary will be or when we expect the missionary to begin using a standard dictionary), 2) the most frequent gospel words (somewhere between 300 and 500 words), 3) the words essential for use in the Missionary Training Center (somewhere between 200 and 300 words). The result would be between 1300 and 2000 words in the target language and the same number in the source language. It would ideally be an inexpensive, paperback or plastic, pocket size dictionary, which the missionary would have with him all the time and literally use up. It would serve to bridge the gap between his needs and the standard dictionaries. It would contain all the necessary information about the forms of nouns and verbs, much of which standard pocket dictionaries do not include, and, in addition, it should have a typical sentence or phrase to show how the word is used. Almost no pocket dictionary has sample sentences or phrases, the Navajo glossary described being a notable exception. With the aid of computer technology, we are in a position to produce such glossaries and I believe they would provide considerable help to the beginning missionary.

We can expand the usefulness of this idea to all the languages in which the Church is training proselyting missionaries and it would not have to require the amount of time and energy invested in the preparation of the (German) gospel frequency list by Nielson. If we were to derive a single corpus of gospel language for English, we would not have to enter 70,000 words into the computer for each proselyting language. At present, there are some materials already available to begin such a project. They consist mostly of scriptures and concordances to scriptures, but they also contain magazine articles, conference talks and manuals. I believe our projected profile should include the new missionary discussions and a general treatment of gospel principles such as the one used by Nielson. Likewise, the essential words for use in the Missionary Training Center would be the same for all languages. For the third component (the core vocabulary) a different course may have to be taken if frequency counts are not already available in a given language.

I have tried to show that theological dictionaries, glossaries of organizational terms and commercial pocket dictionaries do not meet the lexical needs of L. D. S. proselyting missionaries and that their lexical needs consist of 1) a core vocabulary of the most frequent words in the language, 2) a gospel vocabulary of the most frequent religious words, and 3) an "MTC" vocabulary of terms unique to the Missionary Training Center. I have further tried to show that the core vocabulary can be derived from available frequency counts and that the gospel vocabulary and the "MTC" vocabulary can be derived once for all languages. I believe the time has come for us to use our expertise and our technology to provide useful and inexpensive glossaries for missionaries.

23.6
Missionaries entering the Missionary Training Center come from a wide variety of learning backgrounds and experiences. There is a marked difference in their learning capabilities, particularly among those assigned to English-speaking missions. Yet, all of them are expected to memorize the same set of standard discussions. This expectation sometimes becomes an awesome task, especially for young men and women who are unaccustomed to intensive learning situations. It can be particularly frustrating for those who have low reading abilities, low vocabularies, and/or possess some learning disabilities.

Imagine yourself attempting to read a textbook, documentary, or a professional journal that is written well beyond your level of comprehension. You struggle and try to understand the intended message, and yet, the more you try, the more confused you become. In anger and frustration you put the book or the article aside, usually with such heated remarks as, "Why can't they use words I understand?; Why do they have to write so tricky and complex?; I wonder if they write like that on purpose?" You probably do not take the time to identify whether it is the vocabulary or the syntax or a combination of both that is giving you trouble; all you know is that you did not understand what it was that was supposed to be communicated.

Many missionaries feel this same kind of frustration as they begin learning and memorizing the discussions. Some of them have come from special education backgrounds. Many have come from high school resource rooms where they struggled with reading and other related skills. They come wanting their MTC experience to be different, to somehow be easier and more successful than their learning experiences of the past. And yet, it proves to be no different at all. The standard discussions confront them with complex sentence structure and difficult vocabulary that prove to be beyond their ability to comprehend. They, of course, do not know that; all they know is that they are once again not understanding the given material.

Prior to February, 1981, those missionaries who struggled with memorizing were identified through a screening and testing process. At that time, the only course of action available was to teach them to rewrite the discussions in their own words. It was soon recognized, however, that giving them the task of simplifying that which they did not initially understand was overwhelming and unrealistic. It was decided that a new approach to helping these missionaries needed to be developed.
To determine which approach would best meet the needs of the missionaries, it was felt that two general studies should be made: that of determining the average reading and vocabulary grade levels of those tested, and that of identifying the average readability and vocabulary levels of the current discussions.

To accomplish the first study, that of determining the reading levels of those tested, the Durrell Battery of Reading Tests and Slosson Vocabulary Test were used. The results of missionaries tested between November 1980 and May 1981 were carefully examined, and it was discovered that 207 of the 271 (76%) tested during that time were functioning on an overall sixth grade level or below. An examination of the Slosson Vocabulary Test scores also indicated that these same missionaries were found to have an average expressive vocabulary grade level of 6.5.

To accomplish the second study, that of identifying the average grade levels of the current discussions, the Gunning-Fogg Readability Index, the SMOG Grading Formula, and Fry's Readability test were used and compared. These indexes examined the complexity of the sentence structure, the length of the sentence, and the vocabulary difficulty. Results from the tests indicated that the mean reading grade level of the current discussions is 9.5 (with a range of 8.1 to 11.5), that the median reading grade level is 9.4, and that the mode reading grade level is 10.1. The average reading and vocabulary levels of the current discussions, therefore, were found to be on the tenth grade level, a level considerably above the abilities of 76% of the missionaries tested.

It was decided that a complete set of simplified discussions needed to be prepared to help slow-learning missionaries understand and memorize that which they were expected to teach.

Using the Gunning-Fogg Readability Index as the standard by which to base simplifications, the main ideas of each concept in the discussions were analyzed and put into language and syntax that missionaries functioning on a fifth to sixth grade level could understand. By shortening sentences, simplifying the vocabulary words used, and incorporating clear transitions between main ideas, a shorter and simpler set of discussions was developed. Upon completion of the text, the new simplified discussions were approved to be used by those missionaries reading on an average sixth grade level or below.

As the discussions were simplified, a conscientious effort was made to keep the thought content and the sequence identical to the standard discussions, and to avoid any jargon or colloquialisms that might be considered unique to the Mormon culture. A few samples of the simplifications that were made include:

Man's wisdom alone is insufficient since it is subject to the errors and limitations of human judgement and understanding.

Man's wisdom alone is not enough. Because we are human, we often make mistakes.
Moroni told him there was a book written on gold plates hidden not far from Joseph's home. He said the book was written by prophets who lived anciently in the Americas, and contained a history of their people and the revelations they received from the Lord.

Moroni told him about a book written on gold plates. He said this book was hidden in a hill not far from Joseph's home. Moroni told Joseph that the book had been written by prophets who lived in America long ago.

When Joseph was visited by God the Father and his Son Jesus Christ, he learned that God is not merely a spirit, but has a body which is tangible, like man's, though it is glorified and perfected.

Joseph saw that God has a body like ours, only His is glorified and perfected.

This is important to you because it means that members of your family who have already died, parents, grandparents, or others, can receive the gospel in the spirit world. Of course, the real blessing is that someone living here in this life can be baptized in their names so that they can fulfill the requirements and receive the Lord's blessings. These sacred baptisms for the dead are performed only in very sacred buildings called temples.

Members of your family who have died can receive the gospel in the spirit world. People in this world can help their ancestors by being baptized for them. This is called baptism for the dead. These baptisms are done only in very sacred buildings called temples.

Again, not only were difficult vocabulary words eliminated, but complex sentence structure was also analyzed and simplified.

It has been exciting and rewarding to witness the missionaries that have been tested and put on the simplified discussions begin to progress and have success in their memorization. A few examples of such missionaries follow:

Elder Vincent spent much of his high school experience in resource classes. When he came to be tested, he told us that he had always had a hard time remembering things. About half way through the tests, he hesitantly asked us whether his performance would determine if he would be sent home or not. He quickly expressed a sincere desire to teach, but felt that with his discussion memorization going the way it had, maybe the opportunity to teach would never be his. We assured him that our purpose in testing him was not to see about sending him home; rather, that we were interested in identifying his learning strengths. As we identified his strengths, we would couple them with new memorization methodologies which would help him achieve greater success in his learning.

The tests indicated that Elder Vincent's overall reading was on the fourth grade level and that his expressive vocabulary was on a sixth grade level.
He qualified to be given the simplified discussions. When he saw them for the first time, he softly said that maybe there was hope for him after all. A few days before he was to leave, we followed up on him for the last time and he excitedly told us that he had accomplished his goal of memorizing four of the eight discussions. Then he threw back his shoulders, stood extra tall, and with face aglow, proudly added, "And not only that, I memorized one more complete discussion!"

For the first time that he could remember, Elder Vincent had had success in learning. As we talked about what had contributed to his success, he commented that for him, the simplified discussions were what had made all the difference.

Elder Shannon, who passed off six of the eight discussions, commented, "If it hadn't been for these discussions, I probably would still be back on the first one."

Elder Pratt came from a slow-learning background. The tests indicated that he was reading on an average fifth grade level. He was concerned that we might think he was crazy because he could not memorize, or that we might figure that he was just plain stupid. We showed him the simplified discussions, and as he read through them and compared them to the standard discussions, he became very excited. During our final follow-up, he reported that he had memorized all eight discussions! He said, "If I can do it, anybody can. The MTC has been a grand experience!"

In addition to being a great asset in helping the slow-learning English-speaking missionary, the simplified discussions have also been approved to be translated into all 28 languages taught at the MTC, and to be used by the English senior missionaries and older couples. Brother Steven R. Wright, director of language training at the MTC, recently toured two of the Central America Spanish-speaking missions, and while there saw the simplified in action. He commented that it was interesting to watch senior companions who were using the standard discussions spend a great deal of their time restating, repeating and answering many investigator's questions as they taught. This was contrasted sharply with their junior companions who came to the mission field using the simplified Spanish discussions. They taught with brevity and simplicity, and yet with understanding. The difference in the investigator's understanding was obvious.

Our goal in preparing the simplified was to help the slow-learning missionary overcome some of the frustrations of memorization by giving him a set of discussions he could understand. We feel this goal has been met. President Joe J. Christensen, current president of the Missionary Training Center, has said, "This assistance (the simplified discussions) to the slow-learning missionaries is one to the most significant developments in missionary training in decades."
One of the distinctive claims of the Church of Jesus Christ of Latter-day Saints is that it is a church of restoration—the restoration of primitive Christianity to modern times. This restoration is said to include the return of the spiritual gifts enjoyed by the New Testament Christians. Indeed, the herald of this restoration, Joseph Smith, identified the gifts of the Holy Ghost as one of the distinguishing features of the Mormon religion. Among these gifts was one Smith identified as being "the smallest gift perhaps of the whole and yet . . . one that is the most sought after": the gift of tongues.

But what does the expression "gift of tongues" mean to Mormons? Mormon diaries, histories, sermons, and folklore apply the term "gift of tongues" to approximately three kinds of phenomena:

1. **Divinely-assisted Acquisition/Performance**, defined as supernaturally enhanced performance in a foreign language which one is studying or using. This usage is today commonly applied to the Church translation and missionary programs.

2. **Supernatural Comprehension**, or the ability to understand the message of a language one has not learned. A commonly cited example of this form of the gift is President David O McKay's account of his address to the Maoris of New Zealand during which many seemed to understand his sermon without the aid of an interpreter.
Xenoglossia (from the Greek, meaning foreign tongue), which is the speaking of a genuine foreign language—living, dead, or heavenly—by a person who has not learned the language in any normal way. Most Mormon accounts of xenoglossia come from the Church's early period and probably the best remembered are those dealing with the Adamic tongue.

But Mormonism is neither the first nor the last religion in modern times to claim the gift of tongues. Thousands of people now living claim the ability, by means of the Holy Spirit, to speak as it were, with "the tongues of angels." Though the tongues movement is commonly associated with Pentecostal religions, people claiming the gift of tongues can also be found among Baptists, Lutherans, Episcopalians, Methodists, and even Catholics. The nature of their "tongues" has been the subject of considerable research, and the practice of speaking in tongues has even acquired a technical name: glossolalia. While disagreement exists on why humans produce glossolalia, linguists and other students of this interesting practice agree that glossolalia is a "human utterance devoid of semantic meaning or syntax." While its "phonological structure ... makes it sound languagelike in intonation, melody, and phoneme composition," and while producers of glossolalia typically believe their speech to be genuine language, glossolalia nevertheless bears "no systematic resemblance to any natural language, living or dead."

Like glossolalists (those who make use of glossolalia), Mormons have tended to believe that the unknown tongues uttered spontaneously in church meetings in their early history were actual languages. But a close examination reveals that most if not all accounts of Mormon xenoglossia, do probably, in fact, describe glossolalia. I have four reasons for making this assertion: First,
there is very little reliable evidence to confirm the existence of true xenoglossia among Mormons. Second, the same psychological and social conditions that typically lead to the production of glossolalia in other religions are also found in early Mormonism. Third, what little linguistic data can be recovered concerning Mormon tongues shows strong resemblance not to natural language, but to documented examples of glossolalia. Finally, while it is apparent that LDS Church leaders personally believed that the tongues used by Church members were genuine, there is no indication that they ever received any revelation or made any official claims to that effect.

In attempting to show that Mormon tongues are in reality glossolalia, this study will deal with only the third form of the Mormon "gift," or xenoglossia—the speaking of a genuine foreign language by one who has never studied that language. This paper does not deal, therefore, with divinely assisted performance or supernatural comprehension.

ACCOUNTS OF ALLEGED XENOGLOSSIA

Linguist William Samarin, devoted student of the tongues movement, has pointed out that "a case of xenoglossia could be proven real only if, on the one hand, it were demonstrated that the speaker could not possibly have learned the language in any normal way and, on the other hand, that the language spoken was incontestably a real one." Virtually none of the LDS accounts of xenoglossia can adequately meet both of these criteria.

Most accounts which attempt to verify a tongue's genuineness come from individuals who neither experienced the gift nor knew the language involved. Typical of these is John Corrill's account of his conversion to Mormonism, which reports that he heard the Mormons speak in tongues unknown to him.
"Persons in the room . . . declared, from the knowledge they had of the Indian languages, that the tongues spoken were regular Indian dialects, which I was also informed, on inquiry, the persons who spoke had never learned." Unfortunately, Corrill fails to identify what qualifications his witnesses possessed to give such testimony, except to say that "from what knowledge they had" the tongues seemed genuine. This hardly constitutes expert opinion.

Similar difficulties occur in an account given by Dan Jones and published in the *Millennial Star* in England. Jones reports that "one of the Hindoos . . . from Bengal" attended a Mormon service in which the gift of tongues was manifest and afterwards related "that he had heard . . . eight different languages of the east, which he understood more or less of," including those of Malabar and Malay. Again, it is highly questionable whether one should accept the opinion of a witness who only knew "more or less of" the languages he thought he heard.

Charles S. Smith, on the other hand, relates an instance of xenoglossia involving a listener whose native language was presumably the same as the tongue in question. According to his account, a Welsh sister named Letty Dudley possessed the gift but was in doubt as to the genuineness of the tongue she spoke. When some sailors, including a "native of the Caribbean Islands" who knew no English, accepted an invitation to eat in her home, Smith encouraged the woman to test her gift. She sat down and began speaking to the man from the Caribbean, who while first quite astonished, made a reply. They continued making verbal exchanges for some fifteen minutes, after which the sailors left. The story concludes with a vague expression of Mrs. Dudley's renewed faith.

But while Mrs. Dudley seems to have been satisfied by these events, the
critical reader is not so fortunate. The mere fact of verbal exchanges occurring between two people hardly proves that such verbalizations are genuine language, especially when neither individual gives any explicit testimony to that effect. The critical reader is thus left to wonder: was there any concrete indication that the sailor understood Mrs. Dudley? Did Mrs. Dudley understand the sailor? If so, why is this not mentioned in the story? The failure to give any explicit indication of genuine communication or information exchange disqualifies this account as evidence for xenoglossia.

Less ambiguous is Edward Stevenson's recounting of an incident from the early days of the Church in which native speakers of French allegedly identify a Mormon tongue as being their own. The testimony of the Frenchmen was apparently relayed to Stevenson by a little boy who spoke to the men while standing outside the window at the time of the utterance. The Frenchmen, it seems, were attracted that direction when they heard the gospel being preached in their own language. There are obvious reasons for questioning the accuracy of this account, including the fact that it is a reminiscence of many years and the youthfulness of Stevenson's source. Furthermore, the reliability of all the accounts related thus far is weakened by the fact that in each, the one who relates the story is neither the speaker nor the interpreter of the tongue in question and therefore cannot provide firsthand information concerning what degree of comprehension or communication (if any) was attained.

Though a few firsthand accounts of Mormon xenoglossia (i.e., ones that offer some kind of indication that the tongue spoken is a real language) do exist, none are given from the point of view of the listener/interpreter.
Table 6
Vowels and Diphthongs of Mormon Tongue Texts #’s 1, 2, 7. These counts exclude obvious English words (e.g., Mount Zion, America, Lehi, etc.).

| Text 1 | | Text 2 | | Text 7 |
|--------|--------|--------|--------|
| a - 7  | o - 7  | a - 21 | o - 16 |
| o - 7  | e - 17 | e - 15 | e - 2  |
| e - 17 | u - 3  | u - 3  | i - 2  |
| ai - 1 | aw - 1 | ai - 1 | aw - 6 |
| ah - 1 | ar - 2 | ah - 1 | ar - 2 |
|        | er - 1 |        | er - 1 |
|        | ey - 2 |        | ey - 2 |
|        | oy - 2 |        | oy - 2 |
|        | ow - 1 |        | ow - 2 |
|        | oo - 1 |        | oo - 1 |
|        |        | oh - 2 |        |

25.28
previously. Let us therefore look at the consonants.

Table 7 lists the consonants of the first two Mormon texts, comparing them to an equal number of consonants drawn in sequence from a child's nursery rhyme book, where one would expect to find more redundancy (and therefore possibly less variety) than in ordinary English. But even with this redundancy, the nursery rhymes show noticeably greater variety in phone selection than the two tongues. The first text uses nine different consonants compared to fifteen different consonant sounds in the nursery rhyme sample. In the second Mormon text, in which the sample is larger, the difference is even more dramatic, with twelve different consonants in use in the tongue, as compared to twenty in the nursery rhyme sequence. The reduction in number of sounds is still more obvious in Texts 3 through 6, although of course the samples are too small to judge whether such lack of variety would persist had the transcription continued. The limited number of sounds in use in the Mormon tongues, then, parallels that of known glossolalia.

2. Loss of Infrequent Sounds. In examining glossolalia, Samarin has noted that "in producing a pseudo-language a speaker maximizes what is already common in his primary language," with a corresponding "diminution of what is less common." Interestingly, the same phenomenon can be seen in the Mormon texts. Table 8 lists the frequencies of consonants in English compared with two samples of glossolalia and three Mormon tongues. In spite of the problematically small size of the LDS samples (as opposed to the glossolalia samples which contain 3,000 sounds each), the LDS texts are noticeably more similar in their frequency of consonant usage to the glossolalia samples than they are to normal adult English. While alveolars make up more than half of all the consonants in every case, the glossolalia and LDS tongues show a proportionately greater
Table 7
Comparison of Consonants from Mormon Tongue Texts 1 and 2 with English Nursery Rhymes

<table>
<thead>
<tr>
<th>Consonant Sound</th>
<th>Rhyme #1</th>
<th>Mormon Text #1</th>
<th>Rhyme #2</th>
<th>Mormon Text #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>3</td>
<td>-</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>b</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>t</td>
<td>3</td>
<td>2</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>d</td>
<td>7</td>
<td>-</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>k</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>g</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>θ</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>đ</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>ș</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>m</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>n</td>
<td>4</td>
<td>13</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>ъ</td>
<td>4</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>f</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>v</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>s</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>z</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>h</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>l</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>r</td>
<td>1</td>
<td>-</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>w</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>č</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Total 42 42 94 94

Number of Different Sounds Used 14 9 20 12

25.30
use of these than the English. Similarly, those sounds which are used least in the glossolalia texts, interdental and labials, also tend to be the least used in the Mormon texts. The proportions do not correspond perfectly, of course, but the Mormon tongues do compare more closely with the glossolalia samples than do either the glossolalia or Mormon samples compare with the English. In short, Mormon tongues exhibit the same tendency as glossolalia in using the most common consonants in the speaker's first language while slighting the less-used ones.

3. Echoism. Another phonological feature of glossolalia is echoism, or the tendency to follow a stereotyped pattern of vowels or consonants. That such also occurs in Mormon tongues is shown in Table 9, which presents graphically some of the consonant patterns found in Text #2. The letters have been spaced out for maximal fit, and hyphens are used to indicate consecutive letters (consonant clusters). As can be seen in the table, breath-groups (if one can trust the punctuation) have a tendency to begin with the sequence /s n tr/ followed by /v n t/, with the odd-numbered lines on the table also continuing with the pattern /p l s t/.

It may be interesting here to note a phenomenon which occurs with the pattern /m n t/ which occurs three times (see Text #2, Table 1). The first two times the speaker utters these patterns, he realizes them as unintelligible forms. But the third time the pattern comes up, he manifests it as an English word, mount. Of course, this may be coincidental, the sound of the word mount being dictated by what the speaker wanted to say (which is the usual relationship of sound to meaning). Nevertheless, in light of the fact that this pattern had occurred twice previously in this relatively small but highly repetitive text, it is equally if not more likely that the reverse is true: what the speaker said (mount) was dictated at least in part by its sound.
### Table 8
Frequencies of Consonants in Three Mormon Texts as compared with English and Two Glossolalic Texts

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Glossa #1</th>
<th>Glossa #2</th>
<th>Mormon Text #1</th>
<th>Mormon Text #2</th>
<th>Mormon Text #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilabial</td>
<td>14.1%</td>
<td>14.0%</td>
<td>11.2%</td>
<td>12%</td>
<td>19.1%</td>
<td>38.5%</td>
</tr>
<tr>
<td>Labio- and Interdental</td>
<td>12.3%</td>
<td>.002</td>
<td>6.4</td>
<td>-</td>
<td>3.2</td>
<td>-</td>
</tr>
<tr>
<td>Alveolar</td>
<td>56.7</td>
<td>61.3</td>
<td>60.9</td>
<td>59.5</td>
<td>70.2</td>
<td>61.5</td>
</tr>
<tr>
<td>Alveolarpalatal</td>
<td>5.0</td>
<td>13.3</td>
<td>6.6</td>
<td>16.5</td>
<td>7.5</td>
<td>-</td>
</tr>
<tr>
<td>Velar</td>
<td>7.8</td>
<td>.05</td>
<td>14.6</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table 9
Echoic Patterns in Mormon Tongue Text #2

- S N-T-R V N T _ _ _ _ _ _ _ _ _ _ _ _ _ _ P R L S T S T M N T . . .
- S N _ _ V N T-R _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ . . .
- S N-T-R V N T _ L _ _ _ _ _ _ _ _ _ _ _ _ _ _ T _ R T-T _ _ _ _ _ _ . . .
Echoism is also quite apparent in Texts 3, 4, and 5 which display alliteration and assonance typical of glossolalic utterances.\textsuperscript{85}

Of course, this is not to say that echoism does not also occur in natural language; on the contrary, echoism figures highly in poetic discourse.\textsuperscript{86} But to suggest that Mormon tongues are given in a poetic style is to make a claim for tongues that few Mormons would make for most inspired utterances in the Church. Whereas echoism is present in virtually all known descriptions of Mormon tongues, such poetics are the exception rather than the rule in the "interpretations" of these tongues and in Mormon revelations generally. In other words, LDS tongues show far more similarity to glossolalia than they do to other forms of inspired language in Mormonism.

4. Open Syllables. A number of linguists have observed that glossolalia shows a preference for open syllables, i.e., those that do not end with a consonant.\textsuperscript{87} This is somewhat difficult to measure in the longer Mormon texts, inasmuch as the written transcriptions make it hard to determine in a long word where one syllable ends and another begins. Too, it is possible that in ending some of the words with the letter e, the transcribers were following a convention of English spelling which places a "silent 'e'" at the end of words with "long" vowels. Nevertheless, an examination of the short (and therefore less problematic) words reveals a number of open syllables, especially in Text #2. And of course, nearly all of the syllables in Texts 3 through 6 exhibit open syllables (see Table 1).

5. Consonant Clusters. Samarin also observes that syllables tend to "have either no consonant clusters or clusters of very limited types."\textsuperscript{88} The only clusters found in the first Mormon text are in those words which are apparently borrowed from English, e.g. goste. The only other text to exhibit any consonant

25.33
clusters at all is the first Hawthornthwaite text. The most complex cluster in this sample is one that recurs three or four times, namely the /ntr/ combination in *sontra, sontrote, sontro*. Significantly, this same (or similar) combination is found in a number of glossolalic "words" in various parts of the world. For example, the forms *kindra fendre* and *rentre fente* are part of a glossolalic chant found in a mystical sect in old Russia. The same consonant cluster turns up in American Pentecostal glossolalia in such phrases as *shändré filé sundrukumá shandré*. Indeed, linguists Roman Jakobson and Linda Waugh find "this international inclination toward combinations of n with d or t," as nothing less than "astonishing. The appearance of this very same consonant cluster in a text with very few kinds of consonant clusters cannot, I believe, be adequately explained as mere coincidence. The evidence strongly suggests that glossolalia and the samples of Mormon tongues we have here are a common phenomenon.

Reliability of the Linguistic Data

But how accurate is the linguistic data on which much of this evidence is based? One of the authors of the accounts studied here freely admits that his transcription is given "as near as the narrator can recollect," demonstrating that his sample of tongues is a reminiscence and not a transcription made at the time of the event. No doubt this is true of many if not all of the transcriptions. Furthermore, it is well known that it is extremely difficult to remember a series of sounds when no meaning is connected to those sounds. How then can the transcriptions possibly be considered reliable phonological representations of Mormon tongues?

Fortunately, there exists another description of LDS tongues that may serve as a "control" for the other texts. This account comes from the Logan...
Temple historical record which is compiled each year from the notes of the temple recorder. Since this firsthand account of an event in the Logan Temple was made by the temple recorder, it was no doubt logged within hours of its occurrence, and possibly within only minutes. Nolan P. Olsen, the recorder,
tells how a woman, Sister Watson,
was bearing her testimony about her temple work and genealogical activities. . . . All at once her face lighted up, she looked heavenward, held out both hands, and began speaking in a language we could not understand. We had some knowledge of Danish, Swedish, Norwegian, Finnish, German, Dutch, French, Spanish, Italian, Latin, Maori, Hawaiian, and some words of other languages. There was not one familiar word in her talk that we could recognize. It was very noticeable that the words were full of the letter "L", and the language more closely resembled Hawaiian than any other we could identify.

The use of the pronoun we in this account suggests that the recorder discussed the event with others present. It is significant that he describes the utterance as "more closely resembling Hawaiian than any other [language] we could identify," a statement not made in ignorance, since those present "had some knowledge of . . . Hawaiian." Like glossolalia, Hawaiian exhibits a smaller sound inventory than English, open syllables, and no consonant clusters whatever. The description also suggests that the tongue had an abnormally high degree of alliteration and repetition of sounds, since "it was very noticeable that the words were full of the letter 'L'."

That repetition of syllables also occurred is suggested by the "interpretation," the last line of which admonishes the congregation to do their genealogy "now before it is too late . . . before it is too late . . . before it is too late." Presumably the person giving the interpretation was attempting to follow some repeated pattern noticeable in the tongue.

In spite of the fact that the temple recorder did not furnish a phonetic transcription, he has provided an account of an LDS tongue whose phonological characteristics correspond in every detail with the other Mormon texts as well as
known descriptions of glossolalia. So favorably, in fact, does the Logan Temple account compare with all other known accounts of LDS tongues that one is led to conclude that while the representation of individual phonetic units in the transcriptions may be in error, the essential characteristics of reduction and repetition in each case have been faithfully preserved. The linguistic evidence, then, stands as a firm witness that Mormon xenoglossia is in reality glossolalia.

AUTHORITATIVE MORMON VIEWS

But if there is little or no empirical reason for believing in xenoglossia, is there at least a religious reason for doing so? In other words, are there any authoritative statements from LDS scriptures or leaders which would indicate a doctrinal commitment to xenoglossia? Again, the answer is no. While the Book of Mormon, Doctrine and Covenants, and Pearl of Great Price all make mention of the gift of tongues, none of them give any explicit examples that would indicate that xenoglossia is a genuine form of the gift.

In the Book of Mormon, for example, Nephi promises that those who take upon them the name of Christ by baptism shall afterwards "receive the Holy Ghost; yea, then cometh the baptism of fire and of the Holy Ghost; and then can ye speak with the tongue of angels, and shout praises unto the Holy One of Israel." While Nephi notes that this baptism of fire grants the ability to "speak with a new tongue, even the tongue of angels," he does not specify that this language come without study, or even that it be a natural or meaningful one, a condition true of almost every reference to the gift of tongues found in the standard works. Furthermore, Nephi's use of the expression "tongue of angels" implies that this new tongue is not a natural language at all; indeed, the emphasis of these verses on experiencing the tongue of angels after a "baptism of fire and of...
the Holy Ghost" reflects Pentacostal teachings far more closely than it does modern Mormonism. 94

The one modern revelation that comes the closest to making reference to a documentary occurrence of the gift of tongues is the dedicatory prayer of the Kirtland Temple, included in the Doctrine and Covenants as section 109.95 In it, Joseph asks that "the gift of tongues be poured out upon thy people, even cloven tongues as of fire, and the interpretation thereof."96 The History of the Church records that following this prayer "many began to speak in tongues and prophesy," but fails to describe the nature of these tongues.97 Nevertheless, in view of what is known concerning the tongues that occurred elsewhere in that period of Mormonism, it may be reasonable to assume that the answer to this prayer was not an outpouring of xenoglossia, but glossolalia.

The work of scripture that provides the most detailed discussion of the gift is the same one cited by other tongue-speaking religions: the New Testament. According to the Book of Acts, the apostles were gathered in Jerusalem when the Holy Ghost fell upon them and they "began to speak with other tongues." A crowd gathered, including "men out of every nation under heaven . . . and were confounded because . . . every man heard them speak in his own language." While these events appeared marvelous to some witnesses, others concluded that the apostles were inebriated.98

The meaning of this event has been hotly debated for years by various Christian groups, some of whom view it as evidence for xenoglossia, while others see in it an example of glossolalia.99 Interestingly, President Joseph F. Smith gave an interpretation to these verses that differs from both viewpoints. Speaking of the multitude who heard the apostles, President Smith asserted that

God gave them the gift of understanding and they understood, every man in his own tongue. The apostles spoke in their own Hebrew tongue; they
did not talk a multitude of languages, but the ears and understanding of the multitude were opened and they heard the voice of the apostles and understood what they said.100

This view interprets the events in the Book of Acts as a manifestation of "supernatural comprehension," a form of the gift defined in this paper's introduction. If one accepts that the President of the Church "has the right . . . to give authoritative interpretations of scriptures," then one cannot cite the Book of Acts as evidence for xenoglossia.101

One is equally hard pressed to find any formal approbation of xenoglossia by Presidents of the Church. The only instance I know of in which a President of the Church identified a manifestation of tongues as a specific language is the well-known account of Brigham Young's experience with the gift during an informal meeting in 1832. After the manifestation, the others "flocked around [Joseph Smith] and asked his opinion concerning the gift of tongues" which Young had experienced. Smith "told them it was the pure Adamic language. Some said to him they expected he would condemn the gift Brother Brigham had, but he said, 'No, it is of God . . . .'" 102 It is significant that this is noted in Brigham Young's history not as an official declaration or an inspired statement, but as an opinion. Whatever prompted Smith to make this statement, it is evident that he did not intend it as an official enunciation of Church doctrine.

While on other occasions, the Prophet did teach that tongues "were given for the purpose of preaching among those whose language is not understood," there is no indication that he believed the gift would replace foreign language study.103 On the contrary, he and other members of the Mormon hierarchy went forward with the study of Hebrew and other languages in a traditional manner.104 This apparent need for the gift of tongues to accompany—not replace—foreign language study
was emphasized by John Taylor in his mission report in 1852:

It is good for the Elders to become acquainted with the languages, for they may have to go abroad, and should be able to talk to the people and not look like fools. I care not how much intelligence you have got, if you cannot exhibit it you look like an ignoramus. . . . You may say, I thought the Lord would give us the gift of tongues. He won't if we are too indolent to study them. I never ask the Lord to do a thing I could do for myself. We should be acquainted with all things, should obtain intelligence both by faith and by study. . . . The Elders need to study these things, that when they go to the nations, they may not wish to return home before they have accomplished a good work.105

This does not mean that Joseph Smith, Brigham Young, and others did not personally believe in xenoglossia. Indeed, there is some indication that they did. But while they may have held these opinions personally, there is no known evidence to suggest that they or any other President of the Church advanced xenoglossia as an officially approved explanation for the gift of tongues.106

CONCLUSION

This paper has attempted to demonstrate, not that the gift of tongues is not a reality, but that it has been misunderstood. The virtual absence of verifiable instances of xenoglossia, together with the linguistic and socio-linguistic data, strongly suggest that if xenoglossia does exist, it is extremely rare.

At the same time, it was not the purpose of this study to belittle the practice of glossolalia. On the contrary, the information presented here indicates that, for a period of time at least, Mormons found this phenomenon a very satisfying expression of their religious feelings, one that seemed to unite them with one another and link them to a form of Christianity they felt was their responsibility and their blessing to restore. The occurrence of glossolalia in other religions, far from lessening Mormonism, illuminates the bond shared by
all who seek to commune with Christ and demonstrates the truth taught in the scriptures and emphasized by Joseph Smith that no matter who believes, these signs will surely follow. 107

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NOTES


7. Samarin, Tongues of Men and Angels, p. 5.


10. Ibid., p. 112. Admittedly, the dividing line between "divinely-assisted performance" and xenoglossia can, at times be indistinct, especially with regard to the question of the length of time a person must be exposed to a foreign language before his or her mysterious grasp of it becomes a case of divinely-assisted performance and not xenoglossia. Fortunately, borderline cases are quite rare, with individuals claiming to have had virtually no exposure to the language on the one hand, or regular daily exposure for three months or more on the other. For the purposes of this paper, I have chosen to classify the former as xenoglossia and the latter as "divinely-assisted performance."


12. Dan Jones, "Letter to President Orson Spencer," The Latter-day Saints' Millennial Star 9 (1 August 1847): 238.
Even less substantial is an episode related by Matthias F. Cowley, who assumes a certain tongue to be genuine on the basis of the speaker's "voice, gestures, and intonation." See M. F. Cowley, "Gifts of the Gospel," The Improvement Era 2 (April 1899): 448.


"Diary of Mary Elizabeth Rollins Lightner," typescript in Special Collections, Harold B. Lee Library, Brigham Young University, Provo, p. 6. Hereafter cited as BYU Special Collections. The title notwithstanding, this work is apparently a reminiscence produced after the turn of the century. In a letter written to Emmeline B. Wells in the summer of 1905, Rollins answers a number of Wells' questions relating to early Church history, saying "My Journal got burned up, so cannot remember dates." Rollins goes on to describe events in Missouri from memory, which would not have been necessary, if the aforementioned typescript had been produced from an actual diary. See M. E. Lightner to Emmeline B. Wells, Summer 1905, photocopy in BYU Special Collections, p. 4.


Stanley B. Kimball, Heber C. Kimball: Mormon Patriarch and Pioneer (Urbana, Illinois: University of Illinois Press, 1981), p. 39. Stanley Kimball's acceptance of this event as genuine xenoglossia (see p. 117) seems to typify the naive and uncritical way in which many Mormons view these accounts. Nevertheless, Heber's speaking in tongues to German immigrants no more means he was speaking the German language than Brigham Young's speaking in tongues to an ox means Young was speaking "ox language." See "History of Joseph Smith," The Latter-day Saints' Millennial Star 25 (21 March 1863): 183.

Scrap of Biography, Faith-Promoting Series, no. 10 (Salt Lake City: Juvenile Instructor Office, 1883), pp. 17-19.

Grover's defiant manner is indicated by the fact that she was "vexed," and that she was determined that "they should not take me alive." Ibid.


It should be noted that glossolalia is not learned in the same sense that language is learned, since in glossolalia there is little or no attempt to use "words" one has heard nor imitate patterns one has been exposed to. Nevertheless, glossolalia may be considered learning in a more general sense. See Virginia H. Hine, "Pentecostal Glossolalia: Toward a Functional Interpretation," The Journal for the Scientific Study of Religion 8 (Fall 1969): 221; Samarin, Tongues of Men and Angels, p. 72.

24Samarin, Tongues of Men and Angels, pp. 55-58.

25Samuel Hawthornthwaite, Mr. Hawthornthwaite's Adventures Among the Mormons as an Elder During Eight Years (Manchester, England: Published by author, 1857), p. 91.

26Samarin, Tongues of Men and Angels, p. 142.


28Samarin, Tongues of Men and Angels, pp. 68-72.

29Gerlach and Hine, People, Power, Change, p. 127. For a discussion of objections to this characterization, see Samarin, Tongues of Men and Angels, pp. 22-26.

30"Far West Record: The Conference Minutes and Record Book of Christ's Church of Latter Day Saints; Belonging to the High Council of Said Church, or their Successors in office, of Caldwell County Missouri," typescript of a manuscript; photocopy in possession of author, pp. 49-60. Hereafter cited as "Far West Record." It should be noted, however, that the transgression described in these minutes was more one of teaching contrary to the council's advice and performing unauthorized ordinations than it was speaking in tongues. Other examples of Church leaders' prohibiting or restricting the gift of tongues can be found in Edward W. Tullidge, The Women of Mormondom (New York: Tullidge & Crandall, 1877), p. 100; Journal of Discourses, 26 vols. (London: Latter-day Saints' Book Depot, 1855-1886), 10:324. Hereafter cited as JD.

31JD 4:170.

32Gems for the Young Folks, Faith-Promoting Series, no. 4 (Salt Lake City: Juvenile Instructor Office, 1881), pp. 59-61.

33Samarin, Tongues of Men and Angels, pp. 68-70.

34"Far West Record," p. 50.


36JD 4:170.
37 "Try the Spirits," Times and Seasons 3 (1 April 1842): 747.
38 Samarin, Tongues of Men and Angels, pp. 37, 188, 191-92.
39 Wilford Woodruff Journal, 6 April 1837, Library-Archives of the Historical Department of The Church of Jesus Christ of Latter-day Saints, Church Office Building, Salt Lake City, Utah. Hereafter cited as Church Archives.
40 Tullidge, Women of Mormondom, p. 100.
41 Samarin, Tongues of Men and Angels, pp. 55-58.
42 Ibid., pp. 52-54.
43 HC 2:428.
44 Tullidge, Women of Mormondom, p. 208.
45 Samarin, Tongues of Men and Angels, p. 57; cf. Kildahl, Psychology of Speaking in Tongues, pp. 2-3.
46 E. D. Howe, Mormonism Unvailed: [sic] Or, a Faithful Account of that Singular Imposition and Delusion, from its Rise to the Present Time (Painesville: Published by author, 1834), p. 136.
47 Kildahl, Psychology of Speaking in Tongues, p. 3.
48 Samarin, Tongues of Men and Angels, p. 52.
49 Howe, Mormonism Unvailed, pp. 134-36. The account given here originates with a Mr. Higby, who was an elder of the LDS Church for approximately eight months. Higby also records that one "old gentleman, after considerable urging, spoke and made some sounds, which were pronounced to be a correct tongue. Several others spoke in a similar manner, and among them was myself. I spoke as I listed, not knowing what I said, yet it was declared to be a tongue. The sound of the words used by some, in speaking in tongues, was a medium between talking and singing--and all, as I am now convinced, a mere gibberish, spoken at random and without thought." Ibid., p. 134.
50 Homespun [Susa Young Gates], Lydia Knight's History, Noble Women's Lives Series, no. 1 (Salt Lake City: Juvenile Instructor Office, 1883), pp. 22-23.
53 Doctrine and Covenants 46:27.
55 HC 3:392.
56 "Diary of Mary Elizabeth Pollins Lightner, p. 9; Howe, Mormonism Unvailed, p.134.
Lieut. J. W. Gunnison, The Mormons, or, Latter-day Saints in the Valley of The Great Salt Lake (Philadelphia: Lippincott, Grambo & Co., 1852), p. 74; Hawthornthwaite, Adventures, pp. 92-93; Juanita Brooks, ed., Journal of the Southern Indian Mission: Diary of Thomas D. Brown, Western Text Society, no. 4 (Logan, Utah: Utah State University Press, 1972), p. 116. Later on, however, Church leaders avoided the problems that arose through the interpretation of tongues by adopting the teaching that while the ability to speak in tongues was a gift from God, the messages themselves were the products of the human mind and heart. Joseph Smith, for example, told the Relief Society in Nauvoo: "You may speak in tongues for your own comfort, but I lay this down for a rule that if anything is taught by the gift of tongues, it is not to be received for doctrine."


Howe, Mormonism Unveiled, pp. 133-136.

Hawthornthwaite, Adventures, pp. 89-91.


While Samarin points out that "no experiments have yet been conducted to determine how much text is required for identification," it is probable that he would consider the first two texts of Table 1 long enough for a reliable analysis. See William J. Samarin, "Glossolalia as Regressive Speech," Language and Speech 16 (January-March 1973): 79.

That is, those tongues which Mormons would presumably label xenoglossia. It should be pointed out that this study does not discuss the handful of "words" found in Mormon writings which purport to be examples of the "Adamic language" (e.g., Ahman, Son Ahman, Anglo-man, Adam-Ondi-Ahman) inasmuch as these words do not seem to have been given through the gift of tongues but instead occur in contexts that are, except for these items, entirely English. See JD 2:342.


Hawthornthwaite, Adventures, p. 89.

Samarin, Tongues of Men and Angels, p. 127.


7C Gunnison, The Mormons, p. 74.

71 The transcription here is in IPA (International Phonetic Alphabet). The characters on Table 7 are also IPA.


74 "Mysteries of God, As revealed to Enoch, on the Mount Meuhjah, and sung in tongues by Elder D. W. Patton, of the Church of Latter Day Saints,' (who fell a Martyr to the cause of Christ, in the Missouri persecution,) and interpreted by S. Rigdon," broadside, [n.p. n.d.], photocopy in BYU Special Collections.

75 Interestingly, this is the same rationalization put forth by many modern glossolalists. See Samarin, Tongues of Men and Angels, pp. 162-63; Samarin, "Regressive Speech," p. 78 note 2.

76 These counts are approximate, since they depend on how one divides up the lines. The only other possible explanation for the drastic differences in the two works is that they represent interpretations of entirely different songs. But if one accepts this explanation, one faces the sticky question of "inspired plagiarism," i.e., the problem of explaining the many similarities.

77 Samarin, Tongues of Men and Angels, p. 89.

78 Sarah E. Neibaur O'Driscoll, "Alexander Neibaur" (Kamas, Utah: manuscript in Archives and Manuscripts Department, Harold B. Lee Library, Brigham Young University, Provo, n.d.), p. 1. I have asked various language scholars to identify the language represented by this transcription and have been assured that it is not Old English, German, Dutch, Flemish, Danish, Finnish, Icelandic, Norwegian, Old Norse, nor any Scandinavian language. One scholar commented that the transcription appeared to represent "just somebody playing games."

79 Goodman, Speaking in Tongues, p. 150.

80 Samarin, "Regressive Speech," p. 79.

81 Samarin, "Regressive Speech," pp. 79, 81. I have subdivided some of Samarin's larger categories and rearranged the criteria to suit my organization.

82 Samarin, "Regressive Speech," p. 84.

Echoism can even be seen in the very brief account of tongues given by Thomas Brown who was witness to "a mellifluous unknown tongue, much resembling the Greek in its terminations—"on" &c. apoliston—episton—&c." See Prooks, Diary of Thomas Brown, p. 116.

Samarin, "Regressive Speech," p. 81.

Goodman, Speaking in Tongues, p. 121; Samarin, "Regressive Speech," p. 79.

Samarin, "Regressive Speech," p. 81.


Ibid.; ellipses in original.


Pentacostals commonly refer to the gift of tongues as "the baptism in the Holy Spirit." See Samarin, Tongues of Men and Angels, p. 2.

While Book of Mormon references to the gift are too vague to demonstrate a clear doctrinal commitment to xenoglossia, Robert Clark believes that Alma 19:29-30 demonstrates a Book of Mormon occurrence not of xenoglossia, but of glossolalia. Robert S. Clark, "Let the Gift of Tongues be Poured Out Upon Thy People," unpublished paper in private possession, p. 14.

Section 46 of the Doctrine and Covenants, like its parallel discourses in 1 Corinthians 12 and Moroni 10, lists among the gifts of the Spirit the ability to speak in tongues and give interpretations but does not define the nature of the gift any more than the Book of Mormon references.

Doctrine and Covenants, 109:36.

HC 2:428.


Samarin, Tongues of Men and Angels, pp. 14-16.


J. Reuben Clark, "When Are the Writings or Sermons of Church Leaders Entitled to the Claim of Scripture?" Dialogue 12 (Summer 1979): 72.

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87 Goodman, Speaking in Tongues, p. 121; Samarin, "Regressive Speech," p. 79.

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The only other scriptural discussion of the gift is that found in 1 Corinthians 14. Like other scriptures discussed here, this chapter says nothing that would indicate a doctrinal position on xenoglossia. If anything, Paul's discussion of the unintelligibility of the gift tends to indicate that the phenomenon he is describing is glossolalia.

102 Watson, *Manuscript History of Brigham Young*, pp. 4-5, emphasis added.


104 *HC* 2:318-19; O'Driscoll, "Alexander Neibaur," p. 1. Perhaps the Brethren in Kirtland felt that since the speakers rarely understood what they were saying with their new tongues and since the appearance of the gift was somewhat sporadic, language study was still required for consistent comprehension and communicative competence in a foreign language.

105 JD 1:27.

106 Brigham Young, for example, once stated in a discourse that the Saints could "speak in new tongues, and interpret as well as the learned of the age." Nevertheless, this information is incidental to the focus of his message and is apparently a boast to the non-members present rather than a statement of official Church doctrine. See JD 10:324.

Toward "Linguistic Archaeology"

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The study of lexicons for cultural content has a long history in linguistics, of course. The primary aims of such study have been either the description of a particular cultural scene, such as the Indo-European homeland, or else the reconstruction of language relationships within a family of languages. Nearly all of these considerations have been central or incidental to the historical concerns of linguists. The archaeologists and historians have been, for the most part, bystanders in the process.

This paper maintains that a wide range of problems still remains to be attacked by linguistic means, problems of great concern to archaeologists. I propose increased cooperation between linguists and archaeologists which will redound mainly, but not exclusively, to the benefit of the latter. Some thirty years ago a similar linkage of interests took place in which physical scientists came to the aid of the archaeologists (especially with the advent of radiocarbon dating) only to find that a challenging new subfield of research was opened up to the former in the process. Benefits on an equal scale could accrue to historical linguists by the alliance I envision.

My concern with this possibility arose out of several lines of archaeological and anthropological investigation. Recounting those concerns will serve to introduce the topic. For thirty years as a Mesoamericanist, I have been dissatisfied with the prevailing views about the history of metallurgy in my area. In particular it seemed unbelievable that Peru and Ecuador could have had metalcraft vastly longer than Mesoamerica—and this has been the accepted view—in the face of substantial evidence that those two culture areas were linked by fairly regular contacts. In fact, metallurgy is now dated in the Andean area as early as 1900 B.C. But that is some 2800 years before the archaeologists think those same craft skills were introduced in Guatemala and Mexico. Poking around in neglected archaeological literature I turned up a dozen examples of metal finds extending back perhaps as far as the time of Christ. It is evident that the exigencies of preservation and the vagaries of sampling by excavators have left us with only a fragmentary record of metallurgy as a cultural activity in the material remains from Mesoamerica.

Historical linguistics had, of course, already addressed the issue in part. Millon and Longacre's presentation of the cultural content of Proto-Mixtecan noted that a term for "metal" (or at least for "bell," which was the prime product of the metallurgist in the area) was reconstructable at the level of 1000 B.C. or earlier. Subsequently, Kaufmann's work on Proto-Tzeltal-Tzotzil provided a Mayan term for metal by A.D. 500. It took but little additional effort to locate a
cognate in Huastecan, and then in other Mayan languages, carrying the metal concept back to 1500 B.C. or before. Campbell and Kaufmann's article relating Proto-Mixe-Zoquean to the Olmec civilization of the Isthmus of Tehuantepec provided another datum, with another term for metal going back to the 1500 B.C. era. Thus we now have linguistic evidence for metal use, and presumably metal-working knowledge, in three of the major language groupings in early Mesoamerica. And that evidence provides a dimension of knowledge which archaeology is not likely to come up with for many years.

Other research concerns of mine have been elucidating ancient Mesoamerican social structure and the culture historical sequence of institutional development in that area. A great deal of ink has been spilled in recent years trying to interpret settlement forms, regional site hierarchies, and population size inferred from data such as the number of house foundations. In terms of "chiefdoms" and the development of "social classes." The issues are of real moment in the study of social evolution. Surprisingly, however, little attention has been paid to the resources of linguistics in dealing with the problem. I have supposed that an "ethno-sociology" as well as an "ethno-ethnology" ought to be detectible in the reconstructed lexicons which would provide direct evidence about social developments where much of the current argument turns on inferences based on a fragmentary sample of the material remains.

Two years ago I began a project to systematize the cultural vocabulary derivable from the Mesoamerican languages. I began with a list of some 150 words which seemed important to know about as a direct supplement to what we already know from archaeology. For example, all vessel shapes were listed (bottle, bowl, comal, cup). Other categories included cultivated plants (e.g. achiote, agave, annona, avocado), fauna (cayman, dog, eagle, fox, goat), ritual architecture and equipment (censer, codex, copal, idol, temple), and implements and arms (armor, arrow, bow, knife, obsidian), metals and minerals, and so on. A similar number of more abstract concepts and social role labels were added—items like the directions, colors, names of heavenly bodies, social class and ethnic indicators, and mythic terminology. Synonyms encountered in the lexicons examined have since expanded the list still more.

The logic in selecting these terms was exactly opposite to Swadesh's in identifying the "basic vocabulary" which became the basis for lexico statistics. My purpose is to establish links between peoples and cultures, not to work with the most conservative elements in the lexicon—the terms least likely to respond to intercultural influences. Very specific cultural labels have thus been chosen in constructing my list. With Campbell and Kaufmann, I want to know who passed which features to whom. They detected, for example, that many names of cultigens and such key civilizational concepts as to sell something, to pay for, to write, rubber, sandals, twenty, and year appear to have originated in Mixe-Zoquean, which they identify with the Olmec. At least those expressions reached the Mayan languages via Mixe-Zoquean. Unfortunately their work touched only tangentially on the cultural issues and involved only a limited portion of the Mesoamerican languages.
What needed doing next, it seemed to me in launching my activity, was a comprehensive investigation of the cultural relations hinted at by previous linguistic work. Thus I began systematically to accumulate materials relating to my list of terms for all Mesoamerican languages. Thus far, without funding beyond a little support from my department in providing a student assistant, the effort has yielded partial lists for around 50 languages, utilizing published sources available in the Brigham Young University library. At least as much more needs to be done before exhausting what is easily accessible locally. In the long run much further effort must go to working through more recondite sources.

Several problems arise, naturally. Terms in such very specific domains as are relevant to my purpose are often missing from even the major lexicons. Whereas Swadesh and his cohorts had real hope of completing a 100- or 200-word list for many languages, my problem turns out to be tougher. The way most lexical eliciting is done, even today let alone by early Spanish friars, it is inherently unlikely that published materials on Chol or Mangue or Totonac will contain equivalents for "dysentery," "divination," "demon," or "dish." Complete lists of nearly 400 hoped-for items I aim for will never be forthcoming, in all probability. But the instant task is simply to see what can be found. Beneficial results will come even short of the exhaustiveness desired. For example, words for "cotton" are available, so far, for about fifty languages. Further searching not only in general lexicons but in the specialized literature of ethnobotany could raise that by thirty more or so. Simple inspection of this list raises intriguing questions about the history of cotton(s), but most of the answers will have to wait on systematic work by linguists, of course. For the planet "Venus" or "omen," on the contrary, the pickings are slim—only half a dozen terms in all. Thus at this stage of the work, costly reconnaissance in the sources is required even to learn the possibilities.

The effort involved here may seem excessive for the benefit. The importance of the work to culture historians will be clearer if I mention a few of their problems which seem as if they might yield to this approach.

The classic material with which archaeologists work is ceramics. Much more than half the total work in archaeology, at least in Mesoamerica, involves excavation of broken pots and analysis and description of the fragments. Inferences are made, sometimes tenuously, about "trade" links between regions, and "influences," or even "cults," are supposed to have been felt in distant spots. The basis for such reconstructions is often certain highly specific technological characteristics exhibited in the sherds. The reason for the emphasis on ceramics is their ubiquity and abundance. Yet language is equally ubiquitous, and for the student of culture language has a substantial advantage over examining utilitarian objects—when a word is used, a concept is surely involved. The chain of inference is usually much shorter than when doing sheer archaeology. When only a ceramicist's technique or a stylistic feature can be seen, we remain uncertain of the concepts behind it. Study of that point in historical settings has demonstrated repeatedly that sharing of similar artifacts by two groups need not reflect congruence
in their social structures, world views, or any other sociocultural characteristics of consequence. So discovering what cultural concepts were present in an area ancienly by means of historical linguistics has real advantage over archaeological reconstruction of the past using ambiguous potsherds.

Another substance dear to the archaeologist these days is obsidian. That substance was a prime material from which tools were made. It occurred in nature at only a limited number of volcanic outcrops. Each flow has its own characteristic chemical composition. Ninety percent of the sources in Mesoamerica have now been identified and their chemical compositions are known. Consequently, when we locate obsidian points or chips in a site, we can know from which spot it was imported. For thousands of years certain obsidians were transported or exchanged for hundreds, and even thousands, of miles for either routine or ritual use. A large literature has appeared sketching "trade" relationships whose marker substance, obsidian, we can know specifically as to provenance. At certain historical periods sources of supply changed markedly, which must be related to political and economic relationships. But so far, nobody has studied the related linguistic materials to supplement the results from hard science. When a new obsidian chipping technique or a new point type appeared, would ideas not have accompanied the innovations? And might not linguistic reconstructions offer a chance to shed light on those?

Yet it is in the less well-preserved domains of culture where language comparison is most promising. Terence Grieder and Alberto Bueno Mendoza reported last year from a site in Peru that remains of mangos and bananas had been discovered by them. An archaeologist promptly wrote to say that they were surely mistaken, for those two fruits "were introduced to tropical America by the Spanish and Portuguese following their conquest of the New World." The excavators promptly assured their colleague that indeed they had found what they said, regardless of the supposed historical "fact." The likelihood of establishing the presence of other plants by excavation alone is slim, given the problems of preservation and sampling. Language could tell us more. In Mesoamerica, interestingly, the Atlantic side seems to lack a term for "banana," agreeing with reports by the Spaniards that they introduced the fruit there; however, on the Pacific side of the area a number of languages have names for this fruit. On the face of it one might be able to reconstruct one or more early words unconnected with Spanish influence. The archaeologists and botanists would be benefited by knowing more from those sources.

Gareth Lowe hypothesized some years ago that small obsidian chips discovered in certain places in southern Mesoamerica had been glued to boards in the manner of grinding implements used in lowland South America to prepare manioc for food use. He proposed that manioc had been an important crop in early times in southern Mexico, something unattested in the historical documents. For a fraction of the time, energy, and paper consumed thus far discussing and experimenting with this interesting idea, the total repertoire of names for manioc in Middle America probably could have been developed and interpreted.
Similar questions could be asked about the distribution and time depth of such features as moat-and-wall fortifications, the trophy-skull rack called by the Aztecs tzompantli (which may have been found recently in an excavation dating to B.C. times), the forms of the calendar, occurrence of several forms of intoxicants and hallucinatory drugs, and so on.

Vincent Malmström, an expert on the Mesoamerican calendar, has hypothesized that the complex features in the calendar system originated in a particular sequence, based upon internal calculations and logic. If one wishes to test his view, there are two possibilities, if only archaeological evidence is considered. On the one hand, we can hope for discovery of a sufficient number of monuments which happen to include epigraphic data or some other representation of calendrical information as such, or, on the other hand, do the costly type of investigation known as archaeoastronomy, in which the orientation of sightlines in relation to solar, lunar, and astronomical events are related in historical patterns. By either route, over many years of expensive effort, it might be possible to substantiate, by inference, Malmström's ingenious proposal. Far more effective, and infinitely more economical, would be a thoroughgoing investigation of the complete set of relevant "linguistic artifacts." Inasmuch as the terminology of astronomy, calendar and ritual gives us fairly direct access to the conceptual domain of the ancient peoples themselves in their chronological and regional variations, good sense and economy suggest this approach.

A major thrust in archaeological theory and method in recent years has been to develop research designs based on testable hypotheses or even theories. The assumption is made by the archaeologists that only the most ingenious and comprehensive investigation of the material remains can adequately address these theoretical formulations. Yet it is surprising that virtually nobody among these scholars has considered seriously the systematic use of the data from historical linguistics, which promise results using far simpler designs.

I suggest that failure to utilize historical linguistics fully in dealing with such issues results from two facts: (1) the linguists have thought only of doing reconstructions for their particular concerns, while (2) the archaeologists have not possessed the skills necessary to perform the required labors. Only collaboration between the two fields will solve the situation.

I now wish to spell out the steps necessary to produce reliable results from my present project and then suggest further possibilities.

Step 1. Continue examining published sources in Mesoamerican linguistics until the reasonably accessible ones have been processed. (These data are being recorded on standard forms cross-listed in English and Spanish.)

Step 2. Discover and examine additional sources in the specialized literatures (e.g., ethnomedicine, history of Mesoamerican medicine) in order to supplement name sets in domains where conventional lexicons have left serious gaps.
Step 3. Standardize the orthography. (Thus far the original orthography has been retained, but the author's description of his orthographic system has been appended to the notes.)

Step 4. On another form place similarly-glossed terms from all languages grouped by stocks, families, and subfamilies. Arrange those forms into sets by domains.

Step 5. Reconstruct proto-forms, term by term, utilizing standard works in historical linguistics of Mesoamerica as far as they are useful.

Step 6. Reconstruct directions of borrowing and actual loans in the fullest terms possible, using mapping techniques where helpful.

The whole process might be abbreviated upon attempting Step 5 by lack of appropriate material. A plausible way to proceed then might be to engage in fieldwork where informants in as many relevant languages as possible are sought out whose specific cultural knowledge would be sufficient to permit eliciting the terms desired, though obscure.

The historical linguist may wonder at the apparent naivete of some of the steps outlined. Obviously they differ greatly in complexity, and if the end could be seen from this near the beginning, those most complicated would be subdivided. Moreover, the plan reflects my aims in relation to culture history rather than reflecting methods required. Such shortcomings show all the more why the collaboration of linguists in the project is crucial.

The results clearly would not yield standard linguistic products--the description of a single language system or the reconstruction of some "genetic" relationship. But I believe that novel benefits would result. It seems to me that in their urge to follow out the implications of the genetic model, historical linguists have given short shrift to the phenomenon of borrowing, treating it as a necessary evil. Yet for linguistics to understand the phenomenon of language in the fullest sense, far more needs to be learned about the cultural processes accompanying borrowing between languages. Just as the study of pidgens and creoles had to come out from under a shadow of quasi-illegitimacy, perhaps the systematic study of how language expressions enter one language from another may gain its day in the sun. Certainly the rate of borrowing has never been so high as in the 20th century, and the importance and inexorability of the process worldwide seems matched only by our ignorance of the parameters within which it goes on.

Finally, I invite collaboration by those who can help make my project linguistically respectable. If the task seems odd or even unmanageable, at least the aim is noble.
References


Teachers of foreign languages dedicate a portion of classroom time to helping students understand cultural details in hopes that their students will develop more positive attitudes toward those who are native speakers of the language being studied. There is a need to determine if and how much use of classroom time in explaining cultural details aids in building positive attitudes.

In this study, an attempt was made to answer the question: Does the formal teaching of cultural details in a beginning foreign language course affect the attitudes of students toward those people whose language is being studied?

This study is based on the hypothesis that positive attitudes toward Spanish-speaking people can be developed, providing that: (1) a proper acculturation course is provided, and (2) appropriate materials are utilized.

In order to answer the research question, this study was undertaken to measure attitude change in selected classes of beginning University Spanish students. This study measured changes in attitude of students who participated in an acculturation program and compared these changes with the attitudes of students who only received regular classroom instruction. The subject classes for the study were selected from the beginning Spanish classes at Brigham Young University. The acculturation program extended for a period of six weeks and provided additional cultural experiences to the experimental classes.

Eight Spanish classes were subjects for the six-week study to determine attitude change, four classes each randomly assigned to control or experimental groups. Both experimental and control groups were measured at the conclusion of the study by the Revised Bogardus Social Distance Scale and their opinions evaluated by a questionnaire: "How the North Americans Perceive the South Americans."
In the last four decades scholars have intensified efforts to study attitude change toward a certain country by those learning the foreign language of that country. Some of the most relevant of those studies are McFarlane (1945), Southerland (1946), Nostrand (1964), and Miguel A. Riestra and Charles E. Johnson (1971).

In 1945, Alice M. McFarlane intended to determine if racial attitudes toward African groups could be improved by using a series of films portraying different African races. Her study included fifty-four English elementary students studying foreign language in the elementary schools of Glasgow. Because of a lack of adequate materials, there was no significant improvement. However, it was noticed that films where stories were portrayed had the most influence on attitude improvement.3

Margaret B. Southerland, in 1946, researched to determine if the study of the French language contributed to attitude improvement toward the French people. She studied one hundred and eighty-four students learning French and an equal number of students not studying French in the elementary schools of Glasgow. The results showed that France and its people were rated higher by those who studied French than by those who did not study the language.4

Howard Lee Nostrand, in 1964, prepared a questionnaire to determine how North Americans perceived the French people. He also wanted to determine which cultural insights would best prepare students studying French at the University of Washington for a cross-cultural encounter. The preliminary results showed that these French students perceived the French people as being more like the North Americans than did those who were non-French students. At the same time, Nostrand administered his questionnaire to seventy-two Americans who were residing or had recently returned from France. In this group there was a tendency to perceive the North Americans as having all the virtues. The conclusions indicated that those who rated the French people the highest were those who had studied the language and then went to France. It was also concluded that lack of information regarding insights dealing with daily living and social interactions caused the most perception problems.5
Using FLES (Foreign Language in the Elementary Schools) Spanish Language classes, Miguel A. Riestra and Charles E. Johnson conducted a study to determine if by learning the Spanish language students would improve their attitudes toward Spanish-speaking people. This study involved a hundred and twenty-six students. The researchers used a questionnaire about seven countries: Russia, Spain, Germany, Mexico, France, Argentina, and Bolivia. In the final page of the questionnaire students were asked to categorize which children from the countries named above they would like as playmates. The results indicated that there was a tendency among those children who took Spanish to describe people from Spanish-speaking countries with more positive adjectives, and they also wanted playmates from those countries more so than the children who did not study Spanish.6

The current study was intended to measure the attitude change incurred in students by providing them with a systematic acculturation program and by using materials which seem to contribute to the development of positive attitudes.

The acculturation materials included these textbooks: Culture for Missionaries: South America, Hispanic7 and Teaching About Culture Awareness8, used daily for ten or fifteen minutes during the study.

The population utilized consisted of one hundred and twelve students. Figure 1 shows the distribution of the population:

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<th>First Semester</th>
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<td>Experimental</td>
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<td>Control</td>
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<td>16</td>
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<td>Totals</td>
<td>60</td>
<td>52</td>
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June 1. Distribution of the population by class and by semester level.

27.3
For ease in analysis, the classes were grouped by semester level. The following figure explains the procedure:

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<th>First semester</th>
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<tr>
<td>Experimental</td>
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<td>Control</td>
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<td>Total</td>
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Figure 2. Grouping of the subjects by semester level.

Tables 1, 2, 3, 4, show the raw scores for both first and second semester at the conclusion of the six-week study.

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Table 1. Raw scores and $\bar{x}$ of the Controls First Semester Spanish Students
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**Table 2. Raw Scores and X of the experimental First Semester Spanish Class.**

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**X:** 669.76

**Table 3. Raw Scores and X of the experimental Second Semester Spanish Students.**

**X:** 667.76
Table 4. Raw Scores and X of the control Second Semester Spanish Students' 

The mean for both Spanish students groups in the experimental was significantly higher than the mean scores of the Spanish students in the control groups.

The SS for both the experimental and the control groups was as noticed in table 5:

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<tr>
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<th>First Semester</th>
<th>Second Semester</th>
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<tr>
<td>Exam</td>
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<td>1005876.80</td>
<td>-753727.65</td>
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To analyze the data the randomized two-group design (Posttest only) T score was utilized. The formula used was:

\[
T = \frac{X_a - X_b}{\sqrt{\frac{SS_a - SS_b}{(N_a - 1)(N_b - 1)}}} 
\]

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<tr>
<th>First Semester</th>
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<td>3.76</td>
<td>3.21</td>
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Table 6. The T scores for both beginning Spanish levels,

Now that the T scores for the beginning Spanish levels of instruction have been determined, a table of T is consulted to determine the probability of obtaining T: 3.76 and T: 3.21. The degrees of freedom for the beginning first semester Spanish level was 28 (N-2), for the second semester was 24. The table of T for 24 at 0.05 was 2.064, and for 28 was 2.048. Our T scores were 3.76 and 3.21, which are considered significant. From this analysis we might conclude that the attitude change for both beginning Spanish levels were significant. Therefore, it is concluded that the teaching of cultural details at the beginning semesters of Spanish study contributed to create more positive attitudes toward Spanish-speaking people.
The questionnaire: "How the North Americans Perceive the South Americans," was used to evaluate the impact of the acculturation program. Due to a lack of space in this publication no comments obtained from the participants will be reported. However, it should be mentioned that most of the participants agreed on the positive impact such a program had on their preconceived ideas about the South Americans.

Results of the study suggest that an acculturation program at the beginning levels of Spanish instruction is beneficial in building positive attitudes. While the significant results of the study are attributed to a systematic presentation of cultural details, to a controlled time limit, and to appropriate materials, the researcher obviously cannot generalize these results to all educational settings where the study of culture is desired. It is apparent, however, that relatively simple means are at the teacher's disposal to evaluate the degree of attitude improvement by using an appropriate cultural program (although this information is available only after the acculturation program has been established). To avoid results that are biased in favor of the researcher's desires, the amount of influence of the nationality of the teacher should be studied.

This research has attempted to determine the attitude change in students by an appropriate cultural program, but not the effect that understanding of cultural details has on communication. Certainly, the easiness in communication by understanding of cultural details is of utmost importance, and this also needs to be determined. Anecdotal accounts and research indicate that in addition to the form of instruction (direct method, audio-lingual approach etc.) faulty procedures, lax in teaching, difficulty of the material, insufficient time, and flagrant cheating by students are a few factors that can cause bias in taking cultural tests.
In further studies on the effects of acculturation programs, it would be helpful to consider other populations as well, such as ethnic groups, those with different learning styles, etc. Also, there is no need to restrict such studies to classical empirical research. For example, personal interviews following the end of the acculturation program may provide excellent insights not otherwise available.

Finally, this study indicates the value of teaching cultural details in a beginning foreign language course in affecting the attitudes of students toward those people whose language is being studied.
REFERENCES

1 The Social Distance Scale Revised by the researcher is based on the
one developed by Emory S. Bogardus. For a complete description as to the
objective of this scale as well as to its scoring see Emory S. Bogardus,

2 The researcher’s questionnairie was adapted from the one developed
originally by Howard Lee Nostrand. For further reference see endnote 5.
The original was intended for French-speaking people.

3 Alice Muriel MaFarlane, "A Study of the Influence of the Educational
Geographical Films Upon the Racial Attitudes of Elementary School Children,"
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4 Margaret B. Southerland, "A Study of the Effects of Learning French
on the Attitudes Toward the French," British Journal of Educational
Psychology, 16 (1946), 44.

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Foreign Languages, University of Washington, July 1969), 1-75.

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Elementary-School Children Toward Foreign-Speaking People Resulting From
the Study of a Foreign Language," The Journal of Experimental Education,
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Missionary Training Center, *Culture for Missionaries: South America, Hispanic* (Provo, Utah: Brigham Young University Press, 1980), pp. 1-143. For a detailed outline on how this book was used in the study, the reader is referred to the researcher's thesis.

The current state of the art of foreign language education in the People's Republic of China must be viewed against the backdrop of the Cultural Revolution, which so profoundly affected every facet of Chinese life for an entire decade (1966-1976). As a result of the destructive influence of the Gang of Four during this period, young people were turned radically against education, became activist Red Guards, and stopped studying. All Chinese universities were closed down, and the students and teachers were sent for "re-education" to the country.

Teachers in general, and foreign language teachers in particular, suspected of being tainted by the wicked ways of the West, became special targets of the young revolutionaries. Many were subjected to all manner of humiliation such as the degradation of endless written self-criticism, public revilement in theatrical trials, and assignments to such demeaning tasks as cleaning toilets and vegetable storage cellars. Some of them, seeing no hope for the future, committed suicide.

The physical facilities of schools and universities were no longer properly maintained, some buildings having been converted into prisons for the "counter-revolutionary" faculty. Many books, instruments, and much equipment were wantonly destroyed. Research came to a standstill. Foreign language teacher training, along with that in many other disciplines, was abolished.

Although a number of universities were permitted to re-open several years later, standards were low since a requirement was established that students be drawn from workers, peasants and soldiers. The academic period of four years was shortened to three, and the curriculum was loaded with a preponderance of political indoctrination courses. A number of the present-day foreign language teachers are products of this diluted program and are currently faced with the difficult task of making up their cultural and academic deficiencies.

With the death of Mao Zedong in 1976 and the overthrow of the Gang of Four, the dark decade of the Cultural Revolution came to a close, and schools, colleges, and universities began reopening. The intellectual stagnation of this sterile period gave way to a revival of interest in things foreign, including foreign language study. The development of relations with other countries created a desperate need to produce linguists. The establishment of diplomatic relations with the United States, with its attendant development of economic and cultural ties served to intensify the sense of urgency to learn English—which continues undiminished to the present. This is evidenced not only by the large number of students currently studying the language in secondary
schools and institutions of higher learning, but by those pursuing English courses via television, radio and self-study. A working knowledge of English has become the touchstone for getting ahead and represents modernization in its most pragmatic form. Furthermore, as one observer commented, it is a constructive way to fill the great patches of boredom that go along with too big a population and too little entertainment.

In its goal to create in the shortest possible time an instructional system to teach languages to a large number of students, the PRC found itself faced not only with the task of training new teachers and upgrading the competency of the poorly prepared ones, but also of influencing pre-Cultural Revolution teachers to break with old traditions and to substitute modern techniques for their antiquated pedagogy. Given the natural resistance to change inherent in the teaching profession, this was perhaps the most formidable task facing the institutions.

Other serious problems were the critical shortage of up-to-date textbooks and audio-visual equipment, and the need to refurbish and repair run-down buildings. The latter are still visible testimony of the total neglect of education by the government during the Cultural Revolution. Many teachers now needed to go abroad to enhance their linguistic and cultural knowledge and acquaint themselves with the latest teaching techniques, trends, equipment, and textbooks. Foreign experts in teaching methodology needed to be brought in to serve as resource persons and to assist in modernizing language programs. In short, the academic windows needed to be opened and fresh air let in. Let us see what the People's Republic of China has done to meet these problems during the past five years.

Foreign Language teaching methodology courses are now offered in a number of institutions of higher learning, but primarily in normal colleges and universities. Several prominent universities still do not offer foreign language teacher training programs. Some educators believe that developing language proficiency is more important than methodology training.

Methodology courses are usually of one semester duration, meeting two hours per week. The consensus seems to be that they are rather dull and devoid of significant practical work. The extent of student teaching experience fluctuates widely, ranging from one month to six weeks, teaching one to six classes per week, and attending student teacher seminars and discussion groups. Student teaching is supervised by the college or university supervisor on a regular basis.

Students have no assurance that they will be assigned as foreign language teachers after graduation. Some are placed as interpreters and translators in industry or government. They are not offered a choice and stoically accept whatever position the government assigns them to.

There is no specialization for teaching foreign languages in the elementary schools. In fact, foreign languages (usually English) are taught at only a few such schools and only in the large cities, and there are
no plans to expand the program.

The Ministry of Education estimates it will take 50 years to meet all the foreign language teacher shortages.

Foreign language teachers are brought in from the provinces to several central locations for a period of several months intensive in-service training in methodology. Nankai University (Tianjin) has its own four-month's in-service training program taught by four faculty from Temple University. Special clinics conducted by faculty from abroad are also held in central locations, usually during the summer.

From 20 to 25 percent of foreign language faculty are sent abroad for study and experience. There is no provision for sending undergraduate or graduate students abroad, however.

Since only four percent of high school graduates can be accommodated in any one year in the colleges of the PRC, there is a stiff entrance examination. This test was restored throughout the country in 1977, and has a foreign language portion which had in the past been given a weight of 50 percent. Present plans are to raise this to 100 percent.

Both the Bachelor of Arts and the Bachelor of Science degrees now require two years of a foreign language.

The foreign language curriculum varies with the institution. A wide spectrum of languages (totalling 15), including Chinese as a second language is offered by the Beijing Language Institute, with fewer languages available at other institutions.

English is predominant, with Japanese second, followed by French, German and Spanish. Russian is one of the least popular, and many Russian teachers are being reprogrammed into other languages. First choice of a language is dependent on government needs, both local and national. Students generally take a second foreign language.

While even the B. A. degree is still in the planning stage in certain institutions, M. A. and Ph. D. degrees are offered in others, but only on a limited basis at present.

The average class size is 15 in the universities and often in excess of 50 in the elementary schools.

There is an acute shortage of suitable up-to-date foreign language textbooks. Most of the English materials are of British origin, and although based on sound pedagogical principles, they are somewhat outdated and contain a good deal of typically British vocabulary and stilted pronunciation which the students imitate to perfection.

The Beijing Language Institute has been very active in the field of textbook preparation and has produced some excellent up-to-date materials, particularly for teaching Chinese as a second language. Many universities have replaced their obsolete jury-rigged audio equipment with modern Japanese language labs and classroom units.
Modern duplicating machines are still rare in China and reproduction of material can be rather tedious. Good quality overhead projectors, made in China, exist, but are not yet widely used.

One American observer likened the Chinese classroom to the old one-room schoolhouse--desk for two, backless bench, all lined up in straight rows facing the teacher, who stands on a small platform behind a podium. On rare occasions one sees desks arranged in a semicircle. Classrooms and hallways are often shabby, poorly illuminated, and in various stages of disrepair.

Housing in the form of apartments is available on campus for most of the faculty and staff. Furnishings are spartan, however.

Students at all levels appear to be highly motivated, very bright, and extremely conscientious. They carry 20 hours and have only one purpose: to study. This is particularly true at the university level where the students represent the cream of the crop of the high school graduating classes by reason of the rigid entrance examination. Students have few distractions, and although they are crowded into dormitories, with no privacy, they accept these conditions realizing that they have no alternative, and that, after all, they are better off than they would be at home.

Eager to learn, they fully realize the primary purpose of learning a language: to communicate, and they seize every opportunity to practice the foreign language, speaking without any hesitancy to any susceptible foreigner. The quality of the spoken language is surprisingly good and imitative ability is amazing.

There are no disciplinary problems at any level.

Despite the fact that no faculty studied abroad during the Cultural Revolution and only a relatively small percentage have had the opportunity since 1976, foreign language teachers speak with surprising fluency and correctness and generally are well grounded in the culture of the language. There is keen competition for the limited number of vacancies to go abroad.

The average teaching load is 5-6 hours a week, except for younger faculty who teach up to 10 hours.

A total of 70 faculty from foreign countries, referred to as "foreign experts," are employed by the PRC as teachers of their native language and of certain specialities in a number of key Chinese universities. They have a teaching load of around 16 hours.

Department chairmen are appointed for life and have no fixed retirement age.

The quality of foreign language teaching methodology in the PRC, as in the United States, varies with the teacher and with the opportunity to learn proper techniques. As pointed out above, foreign language teaching methodology courses--where they exist--leave much to be
desired. Many progressive teachers have been exposed to any of a number of approaches but are in a quandary as to which one to adopt. Most of them agree that the old grammar translation technique is outmoded and ineffective and that regardless of the approach used the ultimate goal should be to develop communicative competence.

Direct observation of a broad spectrum of foreign language teaching at levels ranging from elementary school to universities, in cities extending from Beijing and Tianjin in the north to Guangzhou (Canton) in the south and Kunming in the southwest, revealed that many teachers followed sound pedagogical practices. These provided for maximum student involvement and student-generated activities, with a variety of imaginative communicative exercises. Major shortcomings were the inability of some teachers to keep in the target language, the predominance of teacher-talk over student-talk, the complete absence or lack of a variety of visual aids, the encouragement of rote memorization, and at advanced levels the proclivity to use the tradition-bound lecture technique.

In China's national push for modernization there is much evidence that foreign language educators are making a concerted effort to modernize foreign language teaching methods. In this endeavor they are taking an eclectic approach as they study techniques employed in Europe and the United States. They appear to be aware of the need to break old traditions while modernizing techniques and up-grading teaching materials. Barring another Cultural Revolution or other major political upheavals, the People's Republic of China could become recognized as one of the leaders in foreign language teaching methodology before the turn of the century.
SOCIALIZATION AS A FACTOR IN SECOND LANGUAGE TEACHING

C. Ray Graham

Brigham Young University

Language is a peculiar embarrassment to the public school teacher, because outside school, children seem to learn language without any difficulty, whereas in school with the aid of teachers their progress in languages is halting and unsatisfactory. It is common experience that when translated to a town where their native language is not spoken children will become reasonably proficient in the new language in the space of six months. It is equally common experience that after six years of schooling in a second language, whatever the teaching method, most children emerge with a very poor command of the language. (Macnamara, 1973, p. 57.)

So begins Macnamara in his discussion of similarities and differences between children and adult language acquisition strategies.

While this indictment of our strategies for teaching language to children may appear a bit severe, the facts seem to bear out his conclusion. A decade and a half of FLES (Foreign Language in the Elementary School) programs in the 1960's and 1970's supported by millions of federal and state dollars resulted in little measurable change in students' foreign language proficiency at the end of high school. Likewise, public schools with ESL programs have had difficulty demonstrating that they produce more proficient English speakers than those schools with no ESL programs. Nor have such programs been shown to reduce the amount of time necessary for students to become proficient in ESL.

In a recent study by Hale and Budur (1973) of ESL instruction in the Honolulu School District, student performance in English in schools with up to three hours a day of ESL instruction was compared with that of schools with no ESL instruction. Gain scores as determined by outcomes on beginning- and end-of-year tests indicated no significant differences.

Such findings are calculated to shake the very foundations of our profession. Can we solve the problems of language teaching and/or acquisition by simply tinkering with new techniques or innovative methodologies? Or must we look at language acquisition in its larger social context?

I am convinced that the major problem with language teaching in the public schools is that language is seen first and foremost as a subject to be studied and taught rather than as a medium through which to communicate, to establish a social identity and to organize one's own perceptions of the world.

Historically, this focus on language as a subject has come about as a result of centuries of studying and teaching classical languages.
During this century, the focus has been intensified by the formalization of linguistic theory in the form of American Structuralism and later as transformational linguistic theory. In the former, the basic unit of language was the phoneme, in the latter it is the sentence. But both see language essentially as a composite of its phonology, syntax and lexicon. American Structuralism paid some lip service to the analysis of larger units of discourse, but both ignored the most fundamental fact of language, and that is that it is a system for communicating.

Thus, although there is an element of concern for developing communicative skills in language classes, the overriding concern is with teaching the structures of the language. Course syllabuses reflect this emphasis; language tests reflect it; current teaching practices reflect it.

By contrast, if we examine how children go about learning language when left to their own devices in a natural context, we see that concern for structural accuracy is a rather late development. Halliday (1975) has shown that children develop many of the communicative functions and discourse strategies of language long before even the rudiments of grammar are firmly established. Numerous studies have shown that children generally ignore parental correction of malformed utterances, whether the errors be in pronunciation or syntax. And even after most of the basic patterns of the language are learned, say by the age of four or five, children are still incapable of making consistent judgements regarding the wellformedness of sentences. Gleitman et. al. (1973), for example, found that children between the ages of five and eight had difficulty treating sentences as linguistic objects separate from their meanings. In a task in which children were asked to judge whether a number of sentences were "ok" or "silly," a five-year-old judged "I am eating dinner" to be unacceptable because he didn't like to eat dinner.

Hakes (1980) presents convincing arguments for linking the development of metalinguistic abilities in children with the emergence of concrete operational thinking. He notes that while a causal link is difficult to establish, many of the same kind of mental abilities seem to be required in making judgements of wellformedness, synonymy and ambiguity of sentences as are required in performing Piagetian conservation tasks. His study of children between the ages of four and eight indicates that even at eight years of age, children are able to make adult-like judgements only in about 90% of cases involving illformed sentences. So, even if children were interested in focusing on the grammar of the language, this research suggests that in the early years of elementary school at least, they lack the ability to judge the acceptability of utterances.

What is more, studies of the actual process of grammatical development in children learning second languages indicate that even when children do begin to reach the age where metalinguistic abilities are more fully developed, they still go through an evolutionary process in learning the grammar. Rather than learn sentence patterns in a linear fashion as might be predicted by current teaching practices, children seem to learn grammatical patterns by successive approximation of the adult forms. So even though a child may memorize a sentence such as "John doesn't like
peanut butter" early in the language development process, he or she will invariably revert back to a more primitive sentence construction such as "John no like peanut butter" as he or she begins to acquire the grammar of negation. Thus it is questionable whether productive rules can be taught directly to children.

But even if sentence patterns were teachable, the question remains as to whether children are interested in learning them or not. Research by Wong-Filmore (1976) suggests that children acquiring a second language are not particularly concerned about grammatical accuracy, at least not during the initial stages of language acquisition.

Wong-Filmore (1976) traced the language development of five Spanish-speaking first graders in an English-speaking language environment for a period of nine months and found that they progressed through three operational stages in the evolution of their language learning strategies. During the first stage of development the children were primarily concerned with establishing social relationships (p. 659). This was done through the learning of formulaic expressions which served more of an interactional function than a communicative one. As a matter of fact, Wong-Filmore observed that the children seemed temporarily to suspend their communicative needs or desires, content to wait until they knew more.

During this period, the children became very adept at faking comprehension. By careful observation of the context in which utterances were made they were able to appear as though they understood the utterances by imitating the behavior of others involved in the interaction.

The period was also characterized by extensive use of gestures and other non-verbal means of communicating. While the use of gestures continued throughout their language learning experiences, it was greatly reduced during later periods.

The second stage was one in which the central concern was on communication, on getting the point across. During this stage the children began to combine the formulaic utterances learned during the first period. Language mixing increased. Children often substituted words from their first language in places where they had not yet learned the words in English.

Only during the third stage did the children begin focusing to any large degree on grammatical correctness and then the initial effort seemed to be directed largely at getting control over the more global features of the language such as word order. During the nine-month period only one of the five children made significant progress into this stage and that child was the most socially adept, not the most intelligent.

The exact reasons why children eventually begin focusing on form is not entirely clear. Behavioral psychologists proposed that it was due to reinforcement of correct patterns. Brown (1974) and a number of other authors have found that there is no evidence that caretaker approval or disapproval is contingent on syntactic correctness. As a matter of
fact, parents tend to correct primarily for factual correctness or truth value.

Lamendella (1977) has suggested that children gradually make their speech more nativelike because they are thus able to communicate more efficiently. Presumably the more features of their language which learners share with their speech community the more redundancy there is and the more efficient the communication process becomes. While this explanation has a certain amount of appeal there are some notable disconfirming cases. Many learners' interlanguage fossilizes at a stage well prior to the realization of native speech. These speakers seem content to achieve a certain level of communicative ability, and feel little motivation to continue to strive toward perfecting their grammatical patterns. Such is apparently the case in a number of bilingual immersion programs.

In the Culver City immersion program in California, for example, children who have been taught totally in Spanish for three years and then partially in Spanish for an additional three years typically have not achieved native proficiency by the end of the sixth grade. True it is that they perform many times better than children in foreign language programs, but they still fail to achieve the nativelike proficiency characteristic of children who must communicate with their peers in the second language.

A more plausible explanation for the tendency of young people to become native speakers of their first language as well as of a second, is that language plays an important role in the child's development of a social identity.

Of all the characteristics of a person's culture which serve to identify him or her as a member of a particular group, language is one of the most obvious and most powerful. Thus language not only serves as a means of communication but also of integrating oneself into a linguistic community.

To appreciate the power of this motivating force, one but has to read the diary accounts of parents who have attempted to rear their children bilingually. A classical account of one such case study is that of Leopold (1954) who spoke to his daughter Hildegard only in German from birth. Hildegard's mother spoke to her only in English. During the first two years of her life, Hildegard began learning both German and English in approximately equal amounts. At about two-and-a-half Hildegard began interacting with English-speaking peers, and her German began to stagnate—this in spite of Leopold's continued effort to speak to her exclusively in German. By the age of three-and-a-half she had almost completely stopped speaking German. She began responding to her father in English. Near the end of her fifth year her family moved to Germany for six months.

Upon arriving in Germany, her first reaction was one of rejecting German and retreating to English. After a few weeks, however, she resigned herself to the fact that German was the language of the people and she began learning it. Within a couple of months she began speaking German.
to her parents—even to her mother who had never spoken in German to her. By the end of the six-month period in the country, she had almost stopped speaking English altogether.

When the family returned to the United States, Hildegard at first reacted very negatively to English. Within a month, however, she was already speaking English fluently again and had begun to stop speaking German. It wasn't until later that she became fully bilingual.

While this phenomenon of peer influence on children's choice of language has not been systematically studied, numerous diary studies attest to its existence.

The fact that full admission to a speech community requires that a child become a linguistically indistinguishable member of the group seems to exert a great deal of influence on a child's motivation to speak the language natively.

I recall an incident in Los Angeles in which a noted black linguist brought a tape recording of some children from the Watts neighborhood in Los Angeles and played it for our associate dean who was a Chicano. He asked the associate dean to guess where the children were from. The associate dean promptly replied that they appeared to be from Watts. The linguist said, "No, they are from Mexico." The children and their parents had settled in a black neighborhood of Los Angeles and the children had acquired the dialect of their peers, not that of their anglo ESL teachers.

Samuels and Olsen have shown that adults do much better than children on language learning tasks involving drills of the sort commonly used in teaching sentence patterns and pronunciation. No amount of such drills will enable a child to use language appropriately in a functional social context.

It is the normal, not the exceptional, case for children to learn language natively when exposed to it under the proper conditions. If we wish to enable children to be able to utilize the innate language acquisition ability with which every normal member of our species is endowed, we must begin to take into account the social context in which learning takes place.

In practical terms, this means the following: For ESL programs in the elementary school it means that we should begin to recognize that many aspects of the language will be acquired naturally and much more efficiently by interacting with peers than they could ever be taught by a method known today. Candidates for such aspects of the language are grammatical patterns and pronunciation. We should identify more clearly those aspects of the language which may not be acquired very efficiently through unstructured peer interaction and we should focus our teaching efforts on these.

This would mean that instead of starting our instruction with sentence patterns like, "This is a book," which we require the students to master, we might start out with an extended listening period in which we
work on areas of development in English which are essential to the child’s proper functioning in the regular curriculum. This might take the form of telling stories, giving instructions, making concrete simplified presentations on areas of the curriculum which the child will encounter in a more complex form when it is presented to the native English speakers.

For the foreign language classroom, what I am suggesting is that a lot more attention be paid to the social context in which the learning is taking place. This would certainly mean that we would de-emphasize the presentation of sentence patterns per se and take a more functional approach. It would also require that language teaching be seen as a socializing experience rather than an academic one.

In summary I am proposing that we treat language as what it is--a system of communication, a means of establishing social identity and a means of formalizing our perceptions and views of the world.
BIBLIOGRAPHY


Purism versus Pragmatism
in Foreign Language Teaching and Acquisition

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Descartes' famous "Discours de la methode" begins with the well-known observation, "Common sense is the most equally distributed item in the world." This apparently optimistic statement is qualified if not contradicted a few pages later when the author admits he hesitated to study philosophy under the masters of his time, because none of the philosophers could agree among themselves on any of the important issues they studied.

Theories of foreign language education come and go, and new approaches to teaching pass like styles in clothing. Some are rather radical, and are hardly accepted by the foreign language education establishment. But even the establishment itself sometimes unwittingly produces rebels. There are a few teachers who, like Galileo, when threatened by the Inquisition, hastened to deny his heretical position, yet, so the story goes, muttered under his breath, "And yet it turns."

And so it is in our profession. Some members of our discipline question, at times disdainfully, certain techniques -- even though the techniques work! Tracy D. Terrell explains in his article, "A Natural Approach to Second Language Acquisition and Learning," how foreign language acquisition can be increased considerably in the first year class by de-emphasizing grammar and allowing students to speak English in the F.L. classroom as much as they want to. This is not to say that the classroom is totally void of the target language or of grammar; in Terrell's model, the teacher speaks the target language and the student is free to respond in English if he or she so wishes. In his article, which appears in the November 1977 issue of the Modern Language Journal, Terrell claims his students do indeed learn the language. Immediately following his article appears another viewpoint by Mark Goldin, who favors emphasizing grammar and the development of the "humanistic" skills of logical analysis which were once one of the prime "raison d'etre"s for studying foreign languages, particularly Latin. Here, then, are widely divergent systems of foreign language education.

The purpose of my own presentation is not to attack "theoreticians" or "purists" but rather simply to state some alternatives to certain commonly accepted views and practices. To some, what I have to say will be extremely self-evident; to others very "far-out." I realize that one might cite proverbs to justify one's position such as "The proof of the pudding is in the eating," or a variant thereof, "The proof of the language-learning is in the speaking, understanding, writing and reading" or "What works for one won't work for another." I am sorry that that is the case, and I understand perfectly well that some of my ideas may appear to be so strange that all the logic in the world would be useless. And so I will both begin and end this presentation with a plea for a willing suspension of disbelief. At the
end of my presentation, I will show a brief video-tape of the activities of my first-year French classroom which will hopefully serve as some sort of "proof" that some of the ideas I espouse are feasible and educationally sound.

The most direct method of stating some of these less-commonly held views is to draw up a list of positions (or at least of perceived positions) and counter-positions, which will permit a one- to- one comparison.

Position #1. It is totally inappropriate to mix English and the target language in the same spoken sentence.

Counter-position #1: An educated person feels no qualms whatsoever about inserting an occasional foreign expression into his speech, if it serves his purpose. For example: "Rousseau's Weltanschauung would not permit him to trust any well-educated person for very long. The raison d'être of most of his writings is to justify his mania."

Several years ago there appeared in a popular magazine an article entitled "You sprechen..fluent deutsch in eine hour." It was written in a totally silly tone; the author wrote "fractured" German -- sentences containing more English than German. The article was funny. But simply because it was funny does not mean it was not useful. It is my personal but very firm opinion that a student who is trying to learn a foreign language ought to be encouraged to use as many words and sounds of the target language as he possibly can, and then to use English to complete his expression if necessary; above all, he should not be ridiculed or intimidated if he begins to try to speak in the target language and finds it necessary to switch to his native language. The attitude of both many students and teachers, as far as I have been able to determine it, and this is based strictly upon my personal experience, is that the student who switches back and forth from the target language to English is a smart-aleck, a goof-off, a student who is not serious. It is in order to avoid being perceived as such a non-serious student, that many of them simply refuse to try to speak, but rather, timidly say, "Can I say this in English?" Many will say: "The grammar of French or Spanish or German is not like the grammar of English. There is too large of a gap between the student's native language and the target language to allow for such a mixture as you advocate." My answer to this is that I don't believe anyone can prove there is anything intrinsically or morally wrong with either the student or even the teacher speaking "Frenglish" or "Spanglish" or "Deutschlish" during the first few days or weeks of class and then replacing, little by little, the English words with words from the target language; in particular, in order to create in the student a WILLINGNESS to try to use the language, there is no harm, I believe, in allowing him to use a meta-language, or as some have called it, an interlanguage, or "pidgin" language. In other words, I go one step further than does Terrell, because I encourage the student to use a mixture of English and the target language. The reason for this is
that many students feel that until they can pronounce a complete sentence or paragraph in the target language, they should remain in their native language. But, to repeat, the "pidgin" language I am encouraging consists of a mixture of English and the target language. The purist, who rejects this notion, lives outside of time, because he sees language as a perfect piece of art, rather than as a living, growing corpus that can perhaps never be spoken perfectly, not even by members of an elitist academy of the country where that language is spoken. The purist is afraid the student will learn errors that can never be eradicated, or that the student will never take the foreign language seriously. My own experience suggests otherwise. I agree with a growing number of foreign language teachers who favor a communicative-competence approach to foreign languages education, that our job as teachers is not simply to correct errors, but also to encourage communication, and to help students gain self-confidence so that they can progress; I have confidence that with time and encouragement, student will eliminate their own errors.

In fact, I have often wondered why it is that children who are exposed to baby-talk somehow acquire adult-talk, at least in the vast majority of cases. Is not baby-talk a sort of meta-language spoken by parents who attempt thereby to encourage their young children to talk? True, an adult language, a foreign language, is in many respects different from a child learning a first learning, and one of the greatest errors of a past methodology was to fail to take these differences into consideration. But that does not mean that there are NO similarities between the two processes. An important series of articles appeared in New Frontiers in Foreign Language Education, in which many of these same ideas are propounded. Three authors in particular, Corder, Nemser and Selinker show how pidginization, as defined above, has not been exploited to loosen the tongues of our students. This is not a new theory; these authors were publishing their ideas about pidginization in the late 1960's and early 1970's. One wonders why apparently so few in the profession are acquainted with their ideas. A possible explanation is that teachers who subscribe to the other methodologies will not take this approach really seriously; shades of Galileo. (And, of course, they will be condemned to rediscover this technique for themselves, as in my case; for I have only begun to read the literature about this theory within the past three months, after having re-invented it myself over five years ago.)

The only real stumbling block to using "Frenglish" or "Spanglish" or "Deutschlish," it seems to me, is the unwillingness on the part of teachers to learn to think in this meta-language, which admittedly, requires effort. But after the teacher has acquired the meta-language and has begun to use it extensively in class, most students find it immeasurably easier to learn to use the authentic target language than is the case under more traditional approaches.

In order for students to begin to use the authentic target language, they must want to use it and feel comfortable about using it. One of
the greatest difficulties language teachers face is helping students overcome that tremendous attitudinal barrier (which is entirely different from any intellectual barrier they might feel) about actually using the foreign language for real communication. It requires effort to speak in the foreign language, especially when one is just learning. It also requires a sufficiently positive self-concept to be able to endure the somewhat humiliating experience of having to speak very haltingly, in child-like forms, and in a way that requires that one's interlocutor be patient. Some individuals learning a foreign language simply may not have the mental health that is really required, even though they MAY have the necessary native intelligence, to learn a foreign language. This means that the foreign language teacher is much more than the ordinary conveyor of knowledge. He must be extraordinarily supportive and patient but, at the same time, demand that the student make the effort to communicate in the foreign language. For if he fails to demand this of the student, the student, taking the path of least resistance, usually switches back to the familiar ground of his native language. In fact, the biggest problem in the field of foreign language teaching is, always has been, and always will be, finding teachers who are truly committed to helping students learn to speak the language, rather than simply lecturing about grammar. There is no question that lecturing about grammar is infinitely easier for a teacher than the psychologically taxing effort required to both encourage and demand that students use the target language. It is for that reason that so many F.L. teachers fall into the trap of thinking they are teaching a foreign language when all they are doing is lecturing about grammar. No six-year-old child who speaks Spanish natively knows very much about grammar, but he certainly does know how to handle the greater part of his language, and we need to keep this important concept in mind every time we are tempted to pontificate in class.

Position #2. Students cannot learn to speak a foreign language well enough to create their own sentences with less than two years of study. It is therefore useless to try to encourage them to speak anything except choral pattern drills and memorized dialogs.

Counter-position #2. Rainer Sell shows that students can learn to speak a foreign language in one semester. Once they learn how English is related to other Western European languages, and begin to actively use cognates, and once they learn the pronunciation system of the target language, students can speak in the foreign language in a rather short period of time -- about one semester. "Ah yes, but how WELL do they speak," some will say. Answer: Admittedly, not like native speakers, and admittedly, not all will speak as well as others. Some will hardly be able to say more than 3 or 4 sentences; but others will be able to do much more. In fact, as soon as students learn the three points just mentioned, many of them can speak much more than they ever thought would be possible after only one semester. Many of the members of our profession seem to take gleeful pleasure in pointing out all the differences between the student's native language and the target
language, and the myriad exceptions and intricacies of the target language. But by emphasizing the similarities between languages and encouraging students to make intelligent guesses and generalizations, we actualize that proverb which says, "Catch a man a fish and he will eat today; teach him how to fish and he will never be hungry."

Position #3: Students cannot understand the spoken foreign language well enough to allow the teacher to conduct the class in the target language. Therefore the teacher should handle all "important" class business strictly in English, to insure that all students understand everything.

Counter-position #3: If the teacher uses many cognates, if he teaches the students the principles of how to understand these cognates, if he is very careful to use them often, and to avoid using English whenever possible, he can indeed conduct the class in the target language beginning very early. Of course this requires that the teacher be constantly thinking about his vocabulary, to determine if the words he uses are cognates, or are easily recognizable by the students. To simply prattle away, without any thought for the vocabulary the students might or might not be able to understand, is useless. But by consciously using a very precise, cognate-laden vocabulary (even if this includes false cognates), the teacher can work wonders in this area of using the foreign language at a very early stage. A corollary to this idea is that we must slow down in our speech. For years and years, it has been held by many that the student must hear the target language spoken at its normal rate. Why? What is the reasoning behind this "article of faith"? Let us rather slow down and allow the student to understand, and thereby communicate by our attitude that we teachers are truly interested in the student's learning, rather than simply massaging our own egos as we strut in our superior knowledge. In addition, the first items of vocabulary the students learn ought to be directly related to their classroom experience: how to respond to roll-call, how to ask for classroom items (books, pencils, paper, etc.), how to respond to questions and/or ask questions in class. This is what makes using the target language meaningful, and helps us avoid that artificiality so associated with textbooks that pretend students will be leaving to go to the foreign country tomorrow!

Position #4: Students never have to repeat material to which they have been exposed once.

Counter-position #4: None of us really believe that, but many of us act as if we do. We try to teach too much, and thereby end up not teaching anything. We fail to review often enough. We, the professors, seem to assume that because we understand given notions or expressions, that our students understand them and can use them. Instead, we should ask the students themselves, often, if they actually do feel confident about the notion in question. This is an excellent way to encourage discussion in the classroom. Every so often, the teacher should ask: "Comprenez-vous?" "Entienden?" or "Verstehen
Sie?" and encourage students to respond openly and honestly: "Oui;" "Non," "Comme ci, comme ça," "un peu," etc.

Position #5: Students should not look at the written form of the F.L. for several weeks, because if they do, they will fall victim to interference from English. Rather, their first exposure to the target language should be strictly audial. They should listen carefully to the teacher and mimic his pronunciation exactly.

Counter-position #5: The position just stated constitutes the heart and soul of the audio-lingual method, the "hear it and say it" approach. The Suzuki music method is very similar, and is indeed very effective, as the A.L. method is, for children. But as people pass through puberty and into young adulthood, their willingness to accept this strictly audial approach to learning decreases. Students crave to SEE the language as well as hear it. They have already learned to READ one language and we should turn this skill they possess to our advantage, rather than ignore it completely. To refuse this is to treat the students like small children, and they sense and resent this. It is not difficult to teach high school and college students how to apply the study of phonetics, or sound-symbol correlation, as it is sometimes called in the literature, to the target language. This allows students to "sound out," after a short period of study, a high percentage of all the words in the foreign language dictionary. This is infinitely more satisfying to the majority of students than the mimic-memorize method of a few years ago, but which has never really been replaced in many schools. The older approach, which might be compared to the "look and say" method of learning how to read (so forcefully attacked in the book "Why Johnny Can't Read"), produced students who were able to pronounce a very few expressions with native-like skill, but who, upon seeing the written form of the target language, lapsed immediately into very poorly pronounced expressions, simply because they had never learned the relationship of the written symbol to the sounds these symbols represent in the target language. Estarellas and Regen have show conclusively that training in sound-symbol correlation is extremely significant in aiding the student to achieve communicative competence....

Position #6: Learning to write the foreign language has little to do with learning to speak it, and should be put off until fairly late.

Counter-position #6: Most educators, no matter what their discipline, agree that the learning process is enhanced as one brings as many of the senses as possible into play. I have just argued in favor of bringing the eye into the foreign language learning activity at very early stages and now I want to argue in favor of adding to that, the hand. A student who writes in the target language during the first day or week of class, even if it is only to copy a sentence or two he may not completely understand, comes into very close psychological contact with the target language: he creates language. By writing every day, two or three sentences of his own creation, on any theme of his choice,
no matter how inept he may feel, he subvocalizes expressions in the language, and this leads to greater confidence in his ability to actually vocalize it. In fact, if the student actually writes and pronounces simultaneously, that is even better. Writing also aids in the process of visualization, which helps not only in pronunciation but also in the formation of sentences. A wise teacher encourages the student to use writing to express personally meaningful messages at a very early stage, to submit them to the teacher for correction and then to memorize and use them in everyday speech. Such a teacher is then able to help the student compare last week's written and oral work to that of this week, which helps the student become aware that he is in fact making progress in his ability to use the language. I ask my students to write, among other things, their frustrations and concerns if they so desire. Besides improving their French, it is very therapeutic, in that it helps them get these frustrations out of their systems.

Position #7: The techniques and methods of past F.L. teaching systems are all bad. This is the reason that no teachers still use the grammar-translation or audio-lingual methods.

Counter-position #7: Whereas some of us may refuse to consider new methodologies, others act as if foreign language education has no history, or at least, any worthwhile history. But the majority of us probably still use some aspects of these two systems, even if we are very committed to innovation. For most of us, as mentioned earlier, have a tendency to equate the teaching of language with the teaching of grammar; most of us still use the mim-mem technique to teach pronunciation. Both of these "methods" ought to be re-appraised. This is not to suggest that we ought to totally abandon them simply because they SEEM out of date. Indeed, when some of us do begin to change our methodology, we make the mistake of throwing out the baby with the bath water. For example it is very popular nowadays to take the following position:

Proponents of the audio-lingual method were simply unrealistic in their claims that students learn a language by memorizing dialogues.

Counter-position #8: By memorizing, one gains fluency and fluidity. In recent years, memorization has come to be associated with counter-productivity, decreasing enrollments, and anti-intellectualism. I submit that in the ultimate analysis, everything we ever learn is, after a fashion, memorized.

Position #9: Students of foreign language know English grammar. This is why a university foreign language class needs to be held only three days a week: we are building on what the students already know.

Counter-position #9: The great majority of beginning foreign language students have only a rudimentary knowledge of English grammar, no matter how much they may have studied English. English grammar is
simply not taught very much any more, and it is unwise to presume that students understand the terms "personal pronoun," "relative pronoun," or "demonstrative pronoun," much less "past participle," "adverbial clause" or even "definite article." The English teachers no longer teach grammar. This is not intended to be a depreciation of English teachers. It is simply an observation that teachers of English have found that teaching grammar does not improve the area with which most of them are concerned: students' ability to write. And so, it has fallen to us, the foreign language profession, to teach English grammar at the same time we teach the grammar of the foreign language. This does not mean that we must do it all in the first year. But eventually, we should plan on teaching our students English grammar.

I mentioned grammar in negative terms a little earlier, as if to suggest that the study of grammar is not good. I will cheerfully admit that I myself do teach grammar. But in order to keep grammar from becoming the overriding concern of the class, I frequently ask the students which is the most important: pronunciation, vocabulary or grammar. Many students bring to the classroom the mistaken impression that the study of grammar is the most important aspect of their foreign language learning experience; I try to change that by actively encouraging the students to verbalize the idea that pronunciation is more important than grammar, and that grammar is merely a means to an end, improved communication, rather than an end in and of itself. This means that the grammar presentation must NOT be a lecture, but rather a discussion, with students making comments and offering examples. The principal activity of the classroom is speaking, and the material spoken about MAY (or may not) include grammar. Peer-teaching can play an important role in this activity, because students can discuss formal concepts and test each other on them before and after the teacher-led discussion takes place. Since young adults crave order or predictability in the target language, it is indeed appropriate to teach grammar -- and I admit that. But we must keep grammar subservient to the most important activity of the class: improving the capacity to communicate in the target language; we must keep grammar our servant, and not let it become our master.

But the question now arises, "Should the teacher explain grammar, be it that of English or of the target language, in English? Or can he use the target language to make the explanation? If he DOES use the target language, is he not defeating his purpose, since the students will not understand him? Again, I suggest that by speaking Frenglish (or Spanglish), we can communicate quite a variety of concepts to the students. But let us avoid complicated explanations. The grammar is only an EXCUSE to use the language for meaningful communication. The EXCHANGE of ideas is more important than the ideas themselves.

Position #10: Any native speaker can teach the target language.
Counter-position #10: Any native speaker who knows the difficulties the students will encounter as they attempt to learn the target language, and who makes a concerted effort to bridge the gap between the two languages, and this includes not only the grammatical gaps but also the attitudinal gaps, MAY be able to teach the target language EFFECTIVELY. Formal training in contrastive linguistics of the two languages may help, but there still remain large areas that could be better elucidated: the complicated usage of the articles, just for a beginning. And even after having studied such grammatical material, one must realize that after all is said and done, the teacher does not really TEACH a language, but only tries to encourage the student and facilitate his task in LEARNING the language. To some of us this may come as a blow; we are no longer teachers, but mere "facilitators." But if we are really interested in foreign language education, this is one of the hard realities, in my opinion, with which we must come to grips.

In this presentation, I have obviously not tried to be particularly scholarly. Like Descartes, whom I cited at the beginning, I have begun to understand that people think alike but they don't think alike for very long. My intent has not been to criticize, but to indicate what I have learned from personal experience. I wish I could present scientific evidence to prove the validity of these counter-positions. For the time being, until I am able to prove them, I offer them and hope you may be stimulated by them. It is not my intention that the foregoing list be considered definitive, but it does represent some of the greater disparities between what many of the members of the profession are presently doing (or have been doing) for a long time. There is no question that with the official demise of the audial-lingual approach, the profession has acquired a variety of approaches which we usually call "eclecticism." But the principal issue which still remains to be solved is that of "WHAT" are we supposed to be teaching in the F.L. classroom. Is it actually possible to provide the student with sufficient "information" and more importantly, sufficient confidence, to enable him to actually communicate in the F.L.? If so, then every class period should provide us with food for thought, as we try to devise ways to help the students actually acquire this skill. In other words, our method should be characterized not as "eclectic, but rather "pragmatic." We must learn to be extremely flexible, but at the same time, understand very clearly what our long-time goal really is, and not compromise it.

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An Innovative Listening Comprehension Approach vs.

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A listening comprehension approach to second language teaching/learning was tested by operationalizing it in an instructional treatment and controlling for the effects of the approach by contrasting the learning outcomes with those of a control group receiving a more conventional audio-visual instructional approach. Three teachers taught Estonian to a total of 24 subjects of varying ages and language background. One teacher instructed one class of each treatment, while the second and third teachers instructed respectively an experimental and a control class. Essentially the same lexical, grammatical and notional aspects were presented in both treatments, the differences obtaining in methodological approach, sequence, context and sometimes in emphasis. After approximately 15 hours of Estonian language instruction, subjects were tested to determine their acquired skills in listening and reading comprehension, vocabulary acquisition, grammar, writing, pronunciation and coping communication. Language aptitude and background as well as attitude, motivation, expectation and other affective factors were also measured via tests and questionnaires.

Because of attrition and disqualification, findings for this study were based on data gathered from only 15 subjects.
A multivariate statistical analysis (Rummage Program) run on the data revealed no significant variation between the two methods.

2. The Pilot Study

2.1 Objectives and Hypotheses

In the literature we read that students in second language courses which stress listening comprehension begin speaking the foreign language voluntarily in class within the first twenty hours of in-class work (cf. Asher, Postovsky, Nord, Ingram, Blair, Terrell, Winitz). The claim is made that students in listening comprehension courses compare favorably with students in cognitive-code and audio-lingual courses in regards to production of the target language, even though the former are never forced to speak the foreign tongue while the latter are from the outset (cf. especially Asher and Postovsky). We also read from these same sources that students in listening comprehension courses do not undergo the counter productive anxiety and fear commonly experienced among students in cognitive-code and audio-lingual courses. The proposed theoretical rationale for the above is essentially that when people are confronted with learning a foreign language in an academic environment which initially stresses the ability to comprehend the language rather than speak it, this then approximates the natural environment in which a baby learns his mother tongue. In such an environment students can focus their entire attention on building language competence through listening with understanding. After listening fluency (or competence) reaches a certain level of complexity and
sophistication, performance or production is naturally triggered and students begin to speak in the target language. If forced prematurely to speak L2, students may become apprehensive and be slowed or even blocked in learning the language, especially when forced speaking is coupled with high expectancy for perfection in language production.

The overall objective of the experiment discussed below was to determine whether or not a strictly listening comprehension approach to language teaching/learning is a justifiable option to more conventional cognitive-code/audio-lingual or -visual methodologies. Specifically, the following hypotheses needed to be tested:

(a) Listening comprehension training by itself enables subjects to begin expressing themselves in the target language within 15 hours of instruction.

(b) Listening comprehension training by itself enables subjects to attain a comparable level of achievement in communicating through the target language within 15 hours of instruction to that of a more conventional method in which speaking is practiced within the same time period.

(c) Within 15 hours of instruction, listening comprehension training by itself enables subjects to achieve significantly better results in the listening comprehension skill than does conventional training in which listening and speaking are practiced.
(d) Within 15 hours of instruction, subjects in a more conventional language course in which speaking is practiced will achieve significantly better results in pronunciation of the target language than will subjects who undergo the same amount of training time in a strictly listening comprehension course.

(e) Within 15 hours of instruction, subjects in a more conventional language course in which morphology and syntax of the target language is focused on and accompanying oral drills and other oral exercises are executed will achieve significantly better results in grammar than will subjects who undergo the same amount of training time in a strictly listening comprehension course in which grammar aspects receive less focused attention, and, if focused on, are practiced only through comprehension exercises.

(f) Within 15 hours of instruction subjects in a more conventional language course in which the written language is introduced early and is used throughout the instruction to impart data to them will do significantly better in reading comprehension and writing than will subjects who undergo the same amount of training time in a strictly listening comprehension course in which a negligible amount of the written word is introduced at the end of their training.

3. Experimental Design

The above hypotheses were tested by operationalizing a listening comprehension approach to second language teaching/learning, and controlling for the effects of the approach by...
contrasting the learning outcomes with those of a control group receiving a more conventional cognitive-code/audio-visual instructional approach.

Teacher and intra-group effect was intended to be controlled by dividing the subjects into four classes - two classes for each treatment group. Class assignment was largely determined by the subjects' scheduling constraints, and thus was deemed effectively arbitrary. However, this largely non-random assignment later turned out to be a statistical thorn in the study's side. The perfect cross-teacher paradigm required two teachers to each teach one class of both treatments. Two teachers were procured, but the schedule of one of the teachers permitted him to teach only one class. Unfortunately, no other person qualified to teach Estonian, the target language, could be found whose schedule was flexible enough to subsume the teaching of two different classes. Now that the cross-teacher experimental design could not be realized, it was decided to obtain a third person to instruct the remaining class, thus allowing for a comparison to be made between the classes, and therefore between the two methods, through a multi-variate statistical analysis of variants.

As a further attempt to equalize the groups, group means were adjusted or estimated by two valid predictors of foreign language learning success acting as covariates. The Hawthorne effect was controlled by telling all the subjects that they were involved in an experiment and by fostering the feeling amongst
them that all four classes were receiving experimental treatments of equal validity and innovation. Also, a post-course questionnaire was filled out by the subjects which, among other things, asked them to rate the teacher both personality-wise and teaching-wise, as well as rate the course in general. These measurements allowed for an additional means to determine any significant teacher effect or treatment-teacher interaction.

Initial fluctuation in subject population was caused by a sharp increase after the introductory lecture and a decrease following the first instructional class. By the second instructional meeting, the subject population had stabilized to 24. Figure 9 shows how the 24 subjects were divided up between the three teachers.

\[
\begin{array}{ccc}
\text{TEACHERS} \\
1 & 2 & 3 \\
\text{Experimental} \\
\text{Class} & 7 Ss & 7 Ss & X \\
\hline
\text{Control} \\
\text{Class} & 5 Ss & X & 5 Ss \\
\end{array}
\]

Fig. 9. Subject and Teacher Constituency of Classes at the Beginning of the Course

3.1 Subjects

Most of the people who registered for the class were university students. There were, however, a group of younger children and adolescents (from 8-16 years old), as well as a
group of older individuals from the community. Table 1 Sample Population Characteristics delineates the sex, age, foreign language and culture background, language aptitude score (MLAT), and several other affective measures of the 15 subjects who remained at the end of the course after attrition and disqualification had claimed 9 of the original 24 subjects.

3.2 Target Language: Estonian

Estonian was chosen as the target language in this experiment because: 1) it is totally unrelated to English, and 2) it was safe to assume that most people living in the area had never heard the language spoken before (nor had most of them even heard of Estonian or Estonia, as we soon discovered). Thus, the possibility for experiment contamination due to previous contact with the language or knowledge of its makeup was negligible.

Subject #13 had been exposed to a limited amount of Estonian in listening to a few conversations between his new Estonian wife and her parents, but this previous minute exposure to the target language was considered inconsequential in terms of the present study.

Estonian is a member of the Baltic-Finnic languages which include Livonian, Votic, Vepsian, Estonian, Ingrian, Carelian, and Finnish. This group of languages is one branch of the Finno-Ugric languages, of which Hungarian (a Ugrian language) and Finnish figure as the most widely used and well known. All together, there are some 24 million people who speak Finno-Ugric languages.
## Sample Population Characteristics

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Table 1. Sample Population Characteristics

*Self-views were rated along a 5 point Likert scale.
Estonian is spoken by about 950,000 people in Estonia, 10-15 thousand in Sweden, 30-35 thousand in Canada and the United States, and several thousand more elsewhere (chiefly in Australia, England, and Germany).

3.3 Experimental Course: Learning Estonian Through Listening Comprehension

The listening comprehension method used in the experimental course was a combination of Asher's TPR technique and a modified version of Nord's Sens-it System, along with certain elements of Winitz' OHR, Lozanov's Suggestopedia, and Gattegno's Silent Way (cf. Sources at the end of this paper to obtain bibliographic particulars on all the authors mentioned herein). While the TPR technique and the Sens-it System took up the majority of class time, Suggestopedia's influence was seen in the relaxation phase at the beginning of each meeting, together with music interspersed at appropriate moments throughout the lesson. The Silent Way and OHR influenced the order of material presentation - specifically, numeration was presented first as these two methods propose.

The experimental course is composed of 12 lessons which were presented to the students in seven 2-hour classes plus one one-hour class in length. Each lesson is divided into two parts: 1) Greetings, Relaxation and TPR and 2) the Tape Script and Student Manual.

The following basic topics were covered in the 12 lessons:
1) numeration, 2) some animals, 3) colors, 4) some verbs, 5) fam-
ily members, 6) personal pronouns, 7) some opposites, 8) expressions of time, 9) body parts, and 10) eating and drinking.

3.4 Control Course: The American Method

The American Method (a catchall term coined by Grittner) is an attempt at combining into a synergistic whole the most current thinking of leading foreign language teaching educators concerning what should belong in a teaching methodology. The result is a rather intriguing synergism of cognitive-code, audio-lingual and audio-visual techniques and principles. With the emphasis initially on comprehension and then on interaction in the target language, innovators in L2 pedagogy mentioned in sections 2 and 3.3 might be moved to call the American Method an "enlightened cognitive-code/audio-visual" approach.

A host of "neo-behaviorist" educators have influenced the formulation of the American Method, most notably Carroll, Rivers, Bennett, Grittner, Jarvis, Belasco, Valette, Politzer, Lafayette, Lambert, Mueller, Oller, Wringe, Wood, Pillet, and Palmer (yes, the Palmer who wrote about language teaching some 60 years ago!). Of these individuals Rivers, Bennett, Grittner, and Palmer have provided the most inspiration and direction in the method's creation.

There are four lessons in the American Method. The basic format followed in each of these is as follows:
Phase 1: Greetings and Orientation
Teacher touches briefly on the notion and structure which will be covered in the day's lesson.

Phase 2: Audioscript
The audioscript presents the basic vocabulary to be learned and around which the structural exercises are built. In lessons 3 and 4 there are more than one audioscript, but the same procedure as is herein outlined is adhered to for each audioscript. Students follow along in their manuals which contain pictures illustrating the text. Lesson 2's audioscript has some of the text written out in certain pictures in order to help clarify the meaning of the audioscript. Lesson 3's audioscripts have even more of the text written out along with the pictures. Some of the new vocabulary is translated also. Lesson 4's audioscripts are written out completely with no accompanying pictures.

Phase 3: Repetition of Audioscript

Phase 4: Idiomatic Expressions
Idiomatic expressions in the audioscripts are explained here. Only lessons 1 and 2 have this phase.

Phase 5: Repetition of Audioscript
Any questions concerning the audioscript are answered. Lessons 3 and 4 do not call for listening to the audioscripts three times, but questions concerning the scripts are to be answered during the second listening.
Phase 6: Vocabulary Testing/Building

Vocabulary is reviewed and extended into different situations through various exercises involving the matching of pictures to their correct descriptions, passage comprehension multiple choice, and true/false quizzes (all the foregoing exercises are found in the student manuals).

Phase 7: Pronunciation of the Audioscript

The audioscripts are read by the teacher in increasingly larger segments as the students repeat after him. Beginning with lesson 3's audioscript II the students read the script and pronounce it.

Phase 8: Minimal Pair Contrast

In lessons 1 and 2 students are asked to listen to minimal pair sentences and decide whether the pairs differ or are the same. Isolated features are length, palatalization and Estonian phonemes (e.g. ŭ, ü, and õ).

In lesson 3 the minimal pairs from lessons 1 and 2 are read by the students.

Phase 9: Communication Activity I

This phase should last anywhere from 20 minutes to an hour. The teacher creates a framework for interpersonal communication based on notions in the audioscripts, and he leads the students into participating through speaking the target language.
Phase 10: Structure

This phase should take up at least half of the class time. Each lesson focuses on different facets of syntax and morphology and presents the material via examples. Students practice the material through substitution, incremental, and communication exercises.

Phase 11: Communication Activity II

This culminating activity may be a continuation of Communication Activity I, or it could be the development of a completely different notion.

The following notions are presented in the lessons:

Lesson 1: names, greetings and getting acquainted
Lesson 2: eating and drinking, in a restaurant, numbers 1-21
Lesson 3: body parts, sickness and health, at the doctor's office, numbers 30-99
Lesson 4: expressions of time, family members, discussion over a film, feeling sorry for oneself, discussing personal data such as age, where from, etc.

The following structure is presented in the lessons:

Lesson 1: personal pronouns, present tense of olla and other verbs
Lesson 2: intonation patterns for interrogative sentences, transforming statements to questions; answering different kinds of questions; present/future tense of verbs; past tense; some irregular verbs in the past; present
and past perfect tenses; the nominative, genitive, adessive, allative, ablative, elative, commitative, and partitive cases of the personal pronouns; the nominative singular and plural, as well as the genitive/accusative singular and plural of nouns.

Lesson 3: different word orders in sentences; negative present and past perfect tenses; imperative; the translatve and elative cases of nouns

Lesson 4: the singular and plural partitive case of nouns

Some of the notional and structural material was borrowed from Felix Oinas’ Basic Course in Estonian, Haman’s Lärobok i estniska, Väär’s Eesti keele õpik keskkoolile, and Eisen’s Aabits.

3.5 Measurement of Variables

The Eesti keele lõpueksam (Estonian language final test) was designed to measure the dependent variables writing, grammar, vocabulary acquisition, reading comprehension, listening comprehension, and coping communication skill. The coping communication skill was actually measured in a separate oral test and was broken down into the variables comprehension, oral response, pronunciation, and grammar. The final test was divided up into 10 sections, each of which was intended to measure one or more of the dependent variables within certain contexts. The entire final was given the value of 100 points and a certain number of points was ascribed to each of the sections. Table 2 displays an analysis of the sections according to which variable(s) they are measuring and what context they are measuring them in. The
weight or amount of points ascribed to each section is also
given.

It is evident from Table 2 that the final test concerns
itself mostly with the dependent variables vocabulary acquisition
(total weight of 26), listening comprehension (total weight of 25), and coping communication skill (total weight of 20).
These aspects, after all, occupied a majority of class time in
the control classes, while, for experimental purposes, only the
first two did so in the experimental classes. There were, of
course, differences in the way the two methods approached the
first two variables: solely listening comprehension (following
issued commands as well as the workbook exercises) was used in
the experimental course to learn new vocabulary, while listening
comprehension (following instructions, commands and compre-
hending the teacher in conversation with him), reading, speaking
and a negligible amount of writing were used for this purpose
in the control course.

4. The Findings

Analysis of the data showed no significant variation due to
method in the dependent variables nor in affect, as well. Anec-
dotal data did reveal some interesting factors, but nothing of
a conclusive nature. Similarly, no significant teacher effect
or subject-teacher interaction was discovered.
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Table 2. Analysis of Final Test Sections According to Dependent Variables Measured, Contexts in Which They are Measured, and the Weighting Ascribed to Each Section.
4.1 Discussion

The preceding pages have shown clearly that due to the adverse circumstances surrounding the pilot study, controls on certain variables were not tight enough and the subject sample was not large enough to produce highly reliable and significant statistics. Indeed, it would require a truly extraordinary inter-method variation in subject test scores for variance between the methods to reach a significant level, given such a small sample. Needless to say, if there had been true randomization in assigning the subjects to the different classes, or even better, if subjects in the control classes could have been matched age-wise and in every other way with the subjects in the experimental classes, the statistics engendered by the study would certainly have been considered more reliable.

All things considered, the lack of significant variance between the two methods suggests therefore the following concerning the hypotheses set down in 2.1: hypotheses (a) and (b) were proven correct in that the subjects in the listening comprehension course (the experimental course) were, statistically speaking, able to speak Estonian equally as well as (and in some individual cases even better than) subjects in the more conventional control course. Strangely enough, hypothesis (c) regarding the expectation of significantly better results in the listening comprehension skill by those who receive training exclusively in that skill than by those trained in a more conventional fashion did not bear out in the present study. Perhaps high within-group
variations can best explain this rather illogical outcome. Hypothesis (d) concerning the expectation of significantly better pronunciation by subjects receiving training in speaking the target language than by those who receive training only in listening comprehension seemed to be borne out by the statistics. The same goes for the writing aspect of hypothesis (f) which proposed that subjects specifically trained in reading in a more conventional course will perform significantly better in reading comprehension and writing than will subjects in a course where only listening comprehension is experienced. However, as explained above, a closer examination of the treatment means for the variables pronunciation and writing reveals a high degree of within-group variance which renders the difference in these areas between the two methods superficial at best and thus uninteresting. It was actually no surprise that hypothesis (e) was not proven correct. Several studies have shown that subjects who have undergone training in vocabulary acquisition, listening comprehension and/or oral communication and have not focused on grammar per se tend to do just about as well in this factor as do subjects who have received a great deal more concentrated instruction on grammatical aspects of the target language. The present study has produced a little more evidence supporting this last-mentioned tendency.

Finally on the basis of this pilot study, statistical, affective, and anecdotal data, as well as this writer's intuitive
feelings all join to corroborate the general proposition that a strictly listening comprehension approach to language teaching/learning is a justifiable option, at least in the beginning phase, to more conventional cognitive-code/audio-lingual or audio-visual methodologies. Further research and experimentation are needed either to nullify or verify the hypothesis that subjects possessing inferior language aptitude tend to learn languages more efficiently and with less anxiety in courses stressing listening training than they do in conventional courses.
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<td>Eesti-ainelised õpingud Ameerika Uhendriikides. Vaba Eesti Sõna, Nr. 31</td>
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<tr>
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