Grammatical Analysis and the Teaching of Foreign Languages.

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GRAMMATICAL ANALYSIS AND
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A Dissertation
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
in
The Interdepartmental Program in Linguistics

by
Aidan Francis Gara
M.S., Georgetown University
December, 1974
Es irrt der Mensch, solang er strebt.

Faust
To L.P.G. Patient encouragement prevails.
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ABSTRACT

Since World War II, the fortunes of Foreign Language teachers in the United States have been aligned with those of American Linguists. Applied linguistics played an ancilla role to F.L. education, a role encouraged by Federal programs subsidizing A-L M teacher training and the construction of language-learning facilities. Recently, questions have been raised about the validity of A-L M (Pennsylvania Foreign Language Project, et al.) and about the psychological and linguistic foundation upon which A-L M rests; vid. Behaviorist psychology and Structuralist linguistics.

Chomsky, while offering little directly to F.L. educators, has prompted a renaissance of the philosophical debate between empiricism and nativism, specifically as applied to language learning. Increasing popularity of Transformational-Generative grammar has accordingly drawn prestige from A-L M to more traditional methodology.
A synthesis of conflicting theories is not immanent; perhaps not even possible. What is possible; perhaps even necessary, is a synthesis of method, incorporating linguistic applications to general areas of F.L. teaching; retaining autonomous phonemes while employing generative phonological rules; combining tagmemes with transforms; utilizing drills alongside grammatical explanations.

Since it is unrealistic to expect the average F.L. teacher to have the theoretical linguistic background requisite for compiling methods and materials in this mold, it remains to linguists to continue to apply their science in the ancilla role.

This paper explores in depth the background of these statements and presents plausible directions for the suggestions made.
Introduction

Scholastic Philosophy, the discipline that dominated the universities of 13th century Europe, has often been termed the *ancilla theologiae*, the 'handmaid of theology'. The men who were the scholastic philosophers: Thomas Aquinas, Duns Scotus, Alexander of Hales, Bonaventure, were clerics — churchmen. They were also theologians. As theologians, they freely used the methodology and rigor of their philosophy in the work they did in speculative theology. For these men, influenced by the medieval ideal of unity, there was no problem in assigning to philosophy this ancillary role.

Scholastic Philosophy holds a prominent position not only in the history of man's general intellectual achievements but very specifically in the tradition of perennial philosophy itself. The *ancilla* function, however, while a glory in the ages of faith, became something much less in the ages of reason. Many philosophers and teachers of philosophy — rationalists, phenomenologists, pragmatists, even existentialists — dismiss the scholastics as theologizers. Condemnation by association.
If we may draw an analogy, linguistics could be
called the *ancilla linguarum*, the 'handmaid of languages',
or perhaps, of language teachers. In the popular mind, this
is what linguistics is all about. Someone who speaks several
languages is termed a linguist. When a linguist is intro­
duced to a non-linguist, invariably the question follows:
"Oh, what language do you teach?" and our questioner has
reference only to a foreign language.

Of course, the initiated recognize that linguistics
is not about foreign language education. In fact, linguistics
is not about education at all, even though many professional
linguists do earn their bread as classroom teachers. A
glance at the schedule for the annual conference of the
Linguistic Society of America shows little time devoted by
the scholars or their audience to language teaching. Most
of the papers will be on linguistic theory. Any bibliography
of international publications in linguistics for the past
ten years will also show a preponderance of works in theory.

This is as it should be. However, the traditional role
of applied linguistics is far from abandoned. The annual
conference of the L.S.A. does have a section devoted to
applied linguistics. The bibliography of linguistic pub­
lications for the past ten years does contain titles.
including theses and dissertations, dealing with language teaching.

This, too, is as it should be. The needs of the foreign language instructor are not on a par with other disciplines. The general methodology education courses are not usually adequate for the specific questions of the F.L. class. By profession, the linguist devotes his research to the analysis and description of language. In this work, linguists co-operate with psychologists (psycholinguistics), physicists (acoustic phonetics), sociologists (sociolinguistics), anthropologists (anthropological linguistics) and mathematicians (computational linguistics). Aspects of applied science in each of these areas hold out utility for the language teacher.

In this paper we shall attempt to show specifically how linguistics has made and can continue to make a substantial contribution to language study. We shall investigate the history of language teaching in the United States, the principal schools of linguistics and their theories of language learning, the controversies current among linguists involving method. Finally, we shall apply linguistic theory to the question of F.L. teaching methodology, using German principally as our model. This approach we hope will demon-
strate categorically the place applied linguistics must retain in F.L. teaching and in language teaching in general.
1.0. To evaluate the relationship between linguistic theory and foreign language teaching in the United States, a degree of historical perspective is essential.

1.0.1. An overview of language methodology in an exact time sequence is not practical since there is considerable overlapping. However, we can set up a division associated with specific events and the publication of specific works. There is no implication that the methods used historically in this country for teaching foreign languages are original. Louis G. Kelly has documented evidence which traces vestiges of methodology currently in use back to medieval Europe and, in some instances, even into classical antiquity.

1.0.2. Although we are concerned with our own time quite understandably, we should remain aware that considerable work in F.L. instruction was attempted in American schools prior to the 20th century. Substantial numbers of immigrants arrived in the United States during the 18th century, the vast majority being from non-English-speaking nations. The colonizing efforts of the Dutch, French, and Spanish are part of every child's history primer and the
immigration figures for the 19th century\(^3\) indicate that proportionately large numbers of European and Oriental immigrants made their linguistic presence felt here early in the 1800's.\(^4\) Foreign languages were taught at Philadelphia's Public Academy and College (French, Spanish and German) prior to the Revolution. Eventually a German Institute was established there but the language dispute among Germans in Pennsylvania after the war caused the Institute as well as the study of German to lose popularity.

Between 1830 and 1850 over 100,000 French and almost 600,000 Germans came to the United States. Between 1870 and 1890, the numbers jumped to 120,000 French and over two million Germans.\(^5\).

1.0.3. If comparatively little work was done in the area of F.L. education in the colonies, this must be traced more to the inability of a developing nation to spend much time and resources on formal education in general than that F.L. study was neglected because of a lack of teachers or methodology. German instruction, for example, is recorded in the colonies as early as 1702. By the beginning of the 19th century, German made its appearance
in several American colleges (Bowdoin, Amherst, Virginia, and Harvard). Before the close of the century, Cornell, Columbia and N.Y.U. in New York as well as the Johns Hopkins University in Baltimore and the University of Chicago offered Ph.D. degrees in Germanic studies. The study of French made its appearance alongside that of German. With the exception of the University of Virginia, Spanish instruction lagged considerably behind.

1.0.4. There were, however, a number of negative factors which exerted strong influence against the establishment of modern F.L. curricula. Based upon centuries-old tradition, Greek and Latin were afforded preeminence in language study even ahead of the study of the English vernacular. "The course of study was designed to turn out right-thinking members of a New England society, and for the most part it did just that. Latin and Greek were the languages that were considered important. Modern foreign languages were tolerated." Other attitudes included a distrust of anything "foreign" based upon isolationist political views and the result of unhappy war experiences. For example, the study of German received widespread disfavor after the Revolutionary War due to the presence of Hessian and Hanoverian mercenaries
among the ranks of the enemy.

This attitude gradually weakened. Slightly more than 100 years after the Revolution (1915), German as a school subject attracted 27% of all American High School students. A new war with the Germans brought disastrous results. By 1922, only 0.5% of the students were taking German. World War II did little to change the statistics simply because the German program never recovered from the blow of World War I.

Another negative factor came in the form of generalizations about foreign immigration, cheap labor, slums, and lowered standards of living. The resulting attitudes of American citizens became a prejudice against these "foreigners" and, by association, their language. The academic community gradually modified this situation with language requirements, usually in French or German.

1.0.5. Absolute generalizations are impossible, but prior to the 20th century, most classes in modern foreign language were probably taught by the Grammar-Translation method. During the last part of the 19th century, some
schools, particularly in urban areas, adopted the European Direct Method. With the advent of World War II, the so-called Army Method captured the imagination of many in the language teaching field. This gradually evolved, after the return of peace, into the Audio-Lingual Method.

1.0.6. Since these four methods have dominated F.L. teaching in the United States, we will investigate each briefly and offer some general critical observations, without passing actual judgment about the effectiveness these methods have enjoyed. Our historical sketch demonstrates that many factors, besides method, have influenced the course of F.L. study in America.

1.1.0. **THE GRAMMAR-TRANSLATION METHOD.** Since the preponderance of F.L. study had been devoted to Greek and Latin before the turn of the last century, it is not surprising that the method employed for teaching these languages was one of grammar analysis with emphasis on morphology and the application of this analysis, with the aid of a glossary or lexicon, to the translation of the classics. The discipline required of the detailed analysis of declensions, coupled with intense memory work, brought about the mental training desirable for students of the liberal arts. The
use the student was able to make of his grammatical knowledge applied well to an understanding of the literary monuments and treasures of antiquity.

1.1.1. Students who worked under this method spent little time, as a rule, in studying phonology. With the exception of seminarians studying for the Roman Priesthood and destined to use the Latin and (to a lesser degree) the Greek tongues in liturgical services, students did not study classical languages as sound — only as writing. Some teachers did require their students to read passages aloud, but there is no way of ascertaining how widespread this practice actually was. Where students in schools and colleges were taught to use the sounds of Latin, these sounds were modeled after the classical phonology (weni, widi, wici) rather than the Italian-influenced phonology (veni, vidi, vici) adopted by the Roman Church.

1.1.2. Since both Latin and Greek are highly inflected languages, the intense morphological analysis was seen as the only way to acquaint students with declensions and conjugations. Accordingly, the noun and verb paradigms were memorized and written, with particular attention to the formulation of rules (as well as their exceptions) for tense signs and personal endings,
grammatical gender and noun classes, prepositions requiring specific case forms, voice and mood alternation, etc. Students wrote sentences from the vernacular into the target language and vice versa. Sentences were chosen to illustrate specific points of syntax (purpose clauses, indirect statement, conditional sentences, etc.). Often the choice of material for translation was influenced by a desire to inculcate traditional religious and moral principles into the student along with his Latin structure.

1.1.3. Translation required lexicon and so the student was also required to learn extensive lists of vocabulary items. These were so arranged as to apply to the specific verb or noun class currently under consideration. Those forms termed "exceptions" presented additional problems not covered by the memorized rules. Textbooks were regularly equipped with a glossary in the back of the book. This glossary often saved the student who found himself in need of an authority. To keep students abreast of their vocabulary responsibilities, instructors gave frequent vocabulary tests. This was complicated in Greek by a different writing system in addition to breathing and accent marks, but the theory of the method
was based upon the Latin adage, *Repetitio est mater studiorum*, and this canonized repetition enabled the diligent student to gain sufficient familiarity with the written forms that he would not have to spend an unreasonable amount of time searching through his glossary.

1.1.4. The literary selections chosen for the sources in classical languages were somewhat dependent on teachers and localities; however, here too a tradition built up assigning Caesar's *Commentaries*, Cicero's *Orations* and Virgil's *Aeneid* to the Latin secondary curriculum while the Greek students worked through Aesop's *Fables* and selections from Xenophon's *Anabasis* and *Katabasis*. Often works were adapted for use in schoolroom situations: removing particularly difficult syntax, replacing more involved forms with simple ones, and shortening longer works to enable a student to attain something of a sense of completion without investing the time required to read a work in its original form.

1.1.5. The application of the Grammar-Translation method to the teaching of modern foreign languages was quite simple. The grammars of the modern languages lacked the
morphological complexity of the classical languages and so the paradigm practice was sharply reduced. Since the goal of the method was a certain facility in translation, no more attention was demanded for the phonology of the modern language than had been necessary for the classical. The lexicon of each was adaptable to the same process of memorization and, like the Latin and Greek texts, glossaries were regularly included in the grammars and readers published for use with this method.

Where literary selections were judged too difficult for the second or third year student (rarely did a student study longer than this under the method) adaptations and abridgments were provided. Peter Hagboldt, of the Chicago University, published 12 German readers based on this principle plus the notion that reading in the target language should be familiar to the student in his native language. "Without realizing that his principle dated back to the late Renaissance, he (Hagboldt) made reading exercises out of German translations of stories known to his pupils, the aid being to help them develop the facility with which native speakers group written structures and link them with their meaning."12 Hagboldt's
readers, published by the D.C. Heath Company of Boston, are still in use today.

1.1.6. EVALUATION OF THE GRAMMAR-TRANSLATION METHOD. Since a method must be judged on the basis of its goals, we should bear in mind that these goals were quite limited.

As there was no intention of teaching the language as speech, no part of the method was directed at achieving any degree of facility in conversation or even fundamental phonology. The course in F.L. taught with this method was terminal after two or three years. Students who did go on to higher studies in language continued with the method, incorporating more sophisticated material for translation, but rarely performing more oral work than reading the passage assigned in the target language prior to translation during classroom recitation.

1.1.7. The basic problem with the method is twofold: the exercise of translation is a difficult one, requiring idiomatic facility with the target language as well as with one's own tongue; the "dead" languages cannot be equated with the changing dialects of living language and the Grammar-Translation method is not well suited to change.
Any prescriptive approach will share this problem. However, this method must be seen, as noted, in terms of its goals. Students could acquire a facility in reading a foreign language through translation and the method is still in use. Where a reading knowledge of foreign language is required for advanced academic degrees, candidates regularly pursue proficiency through grammar analysis and translation.

1.2.0. THE DIRECT METHOD. The Grammar-Translation method was not set up for teaching spoken language and gradually met increasing competition at the turn of the century from a method which had achieved considerable prestige in Europe. This method, with variations, had a number of names: Natural Method, Series Method, Direct Method, Oral Method, New Method. Of these, the name of Direct Method is most commonly found in the literature.

1.2.1. Why one method of F.L. teaching supercedes another at a given period remains a matter of speculation. We could argue that because the Grammar-Translation method does not generally require a teacher with advanced language proficiency, this method was adopted by schools with teachers who had little of the F.L. they were teaching under control. However, there is no proof for this speculation. We know,
for example, that the early teachers were native speakers of the languages they taught. This did not alter their basic approach toward a reading course taught through grammar analysis and translation. The desire for change was more basic.

Even if reading the foreign language is held to be the legitimate aim of teaching, the need was felt by progressive teachers for a more active control of the vocabulary and grammar than could ever be won through the mere learning of rules, paradigms and translation. The Direct Method suggested that this could be accomplished by developing language material, usually a connected passage, by means of questions and answers.

In other words, people in F.L. education were concerned not only with the end result of their efforts in terms of a student who could read the language contrasted with the student who could speak the language; they were trying to say that there were psychological problems connected with the Grammar-Translation approach which limited its ability to be effective.

1.2.2. The tradition behind the theory of the Direct Method runs back through Gestalt Psychology, Humboldt, Schlegel, Descartes, — all the way back to Aristotle and his theory of Universal ideas. Since this question
is very much still a controversy and yet has much relevance to a practical theory of F.L. learning, we shall examine it in much greater detail later. At this point it is important to note the philosophical and psychological intrusions into the language teaching question.

1.2.3. In brief, the Direct Method included the following specifics: no use of the vernacular in the classroom. The target language and only that language was the vehicle of communication allowed. Grammatical description was kept to a minimum. This obviously differed among teachers but the first precept prevailed in any case and all such descriptions of grammar had to be conducted in the target language. An extensive use of gestures, actions and realia (pictures, specific objects, charts, etc.) was connected with the speech sounds. In this way the method sought to move directly from speech act to concept without the intervening step of translation. Quite obviously, there was to be no translation of any of the classroom speech, even for the less imaginative students.

In summary, we may categorize the Direct Method as an attempt to set up an artificial environment which simulated as closely as possible the natural language learning
situation of the native and to recapture the process which every child experiences in learning his own tongue.

1.2.4. EVALUATION OF THE DIRECT METHOD. Some of the immediate problems encountered in this approach are fairly obvious. First, there is the time factor. The number of contact hours, no matter how intense, fall far short of the number of speech hours experienced by the child in his learning experience. The method sought to counter this problem by setting up as many relevant situations in the class which then could be carried over into the students' day, thus lengthening the contact with the F.L. voluntarily. Success here, as with all teaching methods, was varied due to the fact that generally the desire to communicate is stronger than the motive to use the F.L. and the student already has a language he can use naturally for communication — his native language.

The lack of grammatical explanation in the vernacular led to frustration with some students. This frustration does not seem equal to the normal discouragement experienced by a student with any learning problem. Here the student felt at a disadvantage in not being able to understand a point of grammar because of a language problem; two very different realities, at least in his mind.
1.2.5. Since the class was conducted entirely in the F.L., the instructor needed native or near-native proficiency. In some cases, this proved an insurmountable barrier for teachers themselves trained under a method designed to impart only a reading knowledge of the language. Many teachers, faced with this reality, used a combination of the Grammar-Translation Method and the Direct Method, thus effectively destroying the real philosophy of the method: to create the F.L. environment through the exclusive use of the F.L.

The theory of connecting speech act to concept by the elimination of translation as an intermediary often failed because the student did the translating mentally as an intermediary step. The naming process is very deeply ingrained in human conceptualizing. Where this process was limited to mere naming of specific lexical items, the interference was not as great as in syntactic and morphosyntactic areas where the intermediate translation had to hinder seriously any intuitive grasp of grammatical structure.

Finally, the question whether adults and children learn language in the same way is still an unsolved question and is likely to remain so for some time.
1.2.6. Students who worked under the Direct Method, and this method too is still widely used today, did learn phonology and intonation patterns. Where time permitted, these same students attained considerable success in foreign language proficiency. The Berlitz language schools are a case in point. These schools still operate throughout the world, retaining a scrupulous insistence on the Direct Method. Classes are monitored electronically to insure the exclusive use of the target language. But, as noted, this process takes time, and the time problem in a system which traditionally assigns only two years to the study of a modern language did limit goals but did not substantially modify the method.

In higher learning institutions, the Direct Method has been applied to intensive language study in which only one subject — language — dominates the academic day and the individual student spends eight hours a day, or more, using the F.L. Some colleges (e.g. Middlebury College in Vermont) adapted this program to a total immersion process. At this type of school, students of F.L. live apart from other students on campus and use only the target language in all normal speech situations. The Peace Corps uses a similar intensive
study approach in training volunteers for work in foreign countries.

1.2.7. At the beginning of World War II, however, existing methodology, for a variety of reasons, had not prepared a number of F.L. students sufficient for a new need facing the Republic. The United States Army required language specialists for work in intelligence and communications and the Army was unable to find enough qualified Americans to fill these openings since most students who had studied a F.L. were unable to speak the language and also because many of the languages the Army was concerned with were not taught in the States.

Within the armed forces it was realized that vast numbers of young Americans would soon be scattered throughout a large proportion of the globe, and that they would have need of many languages whose very names were unknown to most Americans. Furthermore, though the armed forces appreciated a reading knowledge of any of these languages, they were far more interested in a practical speaking knowledge, and not interested in grammar as such at all. Since the schools and colleges of the nation had produced few persons with a practical control of the familiar languages (a situation deplored by none more than the language teachers of the country), the armed forces realized that they must establish language training facilities of their own. 16.

The result of this decision was a method which still goes under the name of the Army Method.
1.3.0. **THE ARMY METHOD.** Crises always demand immediate and drastic action and the armed forces' reaction to the crisis in F.L. speakers was away from the obvious but, as we have already indicated, discredited source of help — the F.L. teachers — and toward a small fringe community — American linguists.

1.3.1. American linguists had been working with languages long before the army decided it needed help. However, the work American linguists had concerned themselves with primarily was the description of American Indian languages and American dialect speech. The American Council of Learned Societies had initiated a new program in 1941 for language learning as an aid to anthropological study. This program was based on intensive language study, and it was this program the army turned to in 1943 as a crash solution to their immediate need for language experts.

1.3.2. The work commissioned by the American Council of Learned Societies had been based upon the research of Leonard Bloomfield; his basic theory contained in the 1933 edition of *Language* and the more specific application from a work he published in 1942 after a previously unsuccessful attempt, *Outline Guide for the Practical*
Study of Foreign Languages.

With the help of several grants, this program in language study was already functioning on 18 college campuses with almost 700 students enrolled. The fact which caught the immediate attention of army authorities was that 26 languages were offered in these courses and Oriental languages were numbered in that group.

The army was quite specific in its language objectives. It wanted a program which would "...impart to the trainee a command of the colloquial spoken form of a language, and to give the trainee a sound knowledge of the area in which the language is used." Trainees would be required "...to speak the language fluently, accurately, and with an acceptable approximation to a native pronunciation." The army had the money and the authority to put behind its request and this program, previously supported morally by the Linguistic Society and financially by foundation funds, suddenly found itself in a position to move as far and as fast as its imagination would carry it.

1.3.3. As noted, the system followed the method of intense study. Special training centers were set up (as in Monterey,
California) where trainees spent eight to twelve hours a day totally immersed in the study of their assigned F.L. Native speakers were provided as in-class experts and as drill leaders. This second function was very important, for the method included long sessions of mim-mem, mimicry and memorization, beginning with choral recitation and continuing to the modeling of the drill by the individual student after the pattern of pronunciation and intonation demonstrated by the native-speaker expert. Ordinarily, no written material was demanded of the students except for those languages that had close grapheme-sound relationships, such as German. Where training in writing was demanded for students of languages with orthographies unfamiliar to Americans (e.g., Russian, Japanese, etc.) an intervening step, composed of quasi-phonetic transcriptions was employed. This transcription was not the systematic IPA but simply an attempt at expressing sounds in a manner similar to eye-dialect.

1.3.4. No translations were assigned to the sentences modeled by the native speaker. In time, an attempt was made to provide English "equivalencies" of the F.L. expressions but these "equivalencies" were a far cry from the literal procedures of the Grammar-Translation class. However, from
these equivalent expressions evolved a number of phrase books embodying a specific set of practical utterances complete with English glosses and phonetic aids as described above. Many of these booklets resulted from the War Linguistics course taught by Mario Pei of Columbia University and these brief volumes became one of the early attempts at popularizing the work of linguists in F.L. methodology.

1.3.5. For grammar analysis, the Army Method employed the pattern drill based upon work done at the Summer Institute of Linguistics. This system is known today as Tagmemics and is chiefly the work of Kenneth L. Pike, long associated with the Institute and with the Wycliffe Bible Society.

The work of the Institute was done chiefly in non-Indoeuropean languages, preparing grammars of languages for which there had been no writing system and then using this research in missionary work in the field. The Institute likewise trained missionaries to be practicing linguists. The method of tagmemics associates form with function through regular substitution of language elements within the slots in which they occur. This is substantially what the pattern drill effects. Only one element is changed at a time. This forces concentration on the one element and so is a useful tool for showing paradigmatic change
in language forms and for learning new lexical items without going through the isolation of the vocabulary list. The pattern drill also offered practice in the phonology of the F.L. and, since whole utterances were used, in the intonation patterns also.

Those preparing the programs sought to reduce the language under study to the smallest number of patterned utterances considered reasonable and, by drilling these in the mim-mem style, acquaint the student with enough patterns for him to function as a speaker and listener in that language.

1.3.6. The list of linguists engaged by the armed forces to direct their program is very impressive. Moulton\textsuperscript{19} lists the following: Bernard Bloch (Japanese), William S. Cornyn (Burmese), Isidore Dyen (Malay), Mary R. Haas (Thai), Robert A. Hall, Jr. (Chinese), Carelton T. Hodge (Serbo-Croatian), Einar Haugen (Norwegian), Charles F. Hockett (Chinese), Henry M. Hoenigswald (Hindustani), Henry and Renee Kahane (Greek), Fred Lukhoff (Korean), Norman A. McQuown (Turkish), William G. Moulton (German), Thomas A. Sebeok (Finnish, Hungarian), S.N. Trevino (Spanish), Ralph L. Ward (Greek), and Leonard Bloomfield (Dutch, Russian).
The point of interest here is not simply a list of names, some familiar, some not; nor even Moulton's inclusion of this partial list of involved linguists in his report. What we are asked to note here is that historically this is the point when linguists, on a large scale, broke into the language teaching profession as a consultive and directive voice, and all under the auspices of no less an authority than the government of the United States.

1.3.7. The previous point is even more significant when we consider that the armed forces abandoned their extensive interest in the language program very quickly. By April of 1944, less than two years after beginning this program, they stepped out of it completely. What was set in motion here, however, was not simply a wartime emergency expediency but the beginning of a force in F.L. teaching which would dominate the field for at least the next 20 years.

1.4.0. THE AUDIO-LINGUAL METHOD — A-L.M. The force spawned by the Army Method is generally termed today the Audio-Lingual Method or simply the A-L.M. after a series of textbooks by that name. The Army Method aroused considerable interest as a system which could teach large numbers of students a "practical" knowledge of a language, enabling them to communicate in the language, something which most earlier courses had fallen short of achieving.
In addition, the experts in this program were not traditional language instructors but a little-known group of American Structural linguists. The message was clear: language studies of the future must embody linguistic principles. As Fries expressed it:

For at least ten years some of us have been trying to explain that the fundamental feature of the 'new approach' to language learning is not a greater allotment of time, is not smaller classes, is not even a greater emphasis on oral practice, although many of us believe these to be highly desirable. The fundamental feature of this new approach consists in a scientific descriptive analysis as the basis upon which to build the teaching materials. 20.

Naturally, there was opposition from some quarters of the profession. Some F.L. teachers could not imagine implementing the logistics demanded of such a program: native speakers or native-speaker proficiency, the creation of new materials to accompany the method, further schooling for those F.L. teachers already in the field and new teacher-training programs for the future. Others, to be fair, did not understand what this "scientific descriptive analysis" which Charles Fries considered so essential, was all about.

Had the program depended on linguists selling their message to the F.L. teachers, it would have to be con-
sidered very doubtful that A-L M would have spread as it did, particularly in the decade of the '60's. But, as we have already indicated, increasing amounts of money from foundations and, most especially, the Federal Treasury (N.D.E.A. in 1958) achieved what a long debate among the professionals might not have: A-L M was the new method for teaching F.L.

1.4.1. To the program already demonstrated by the armed forces (seeded pattern drills, extensive use of native speakers or audio materials, dialogue, mim-mem), A-L M added the language laboratory (first demonstrated at George-town University between 1945 and 1950), institutes for the training and re-training of language teachers, scholarships and exchange-teacher opportunities for overseas experience.

1.4.2. We may summarize the principles underlying the philosophy of the program as

1. Learning a foreign language implies the formation of new habits and skills.

2. The only real natural method of tackling foreign languages is to teach oral skills before written.

3. The student should work out for himself the grammar of a new structure before seeing the official analysis.
4. One should take account of cultural facts in learning a foreign language. 21.

The connection with Bloomfield (1933) and the American Structural School was immediately evident: Behaviorist theory of knowledge, pre-eminence of speech based on historical priority, grammar through intuition rather than explanation, and the Whorfian hypothesis connecting language and culture.

1.4.3. On the basis of this theory, and with the support already mentioned, A-L M set out to supplant existing F.I. methodology with its own. To this extent it was very successful.

By 1960, texts, tapes, and other audio-visual materials had been developed and were ready to market on a large scale. Modern Spanish, developed by the Modern Language Association, was the first major college text which was fully representative of the new American Method. The so-called 'Audio-Lingual Materials' developed in Glastonbury, Connecticut with a federal grant from the U.S. Office of Education became the prototype for the new direction in secondary instruction. In the early 1960's, a commercial publisher acquired the rights to the materials and began publishing versions in French, German, Italian, Russian, and Spanish. Soon other publishers began producing their own audiolingual textbooks in the commonly taught modern languages. The more skeptical publishing houses made gestures in the direction of the new methodology by slightly revamping their old grammar-reading
texts and providing tapes to accompany them.... Within three years, millions of students were being taught by one or the other of the new texts. More than $30,000,000 had been expended for 6,000 high school language laboratories. Tens of thousands of teachers had been run through a pedagogical version of the intensive military programs in the form of summer training institutes financed by the federal government. And where there had been only three states with foreign language supervisors in 1957, by 1964 the number had grown to 70 supervisors in 40 states, most of them sympathetic to the objectives of the American Method. 22.

1.4.4. Whether or not the theory behind A-L M is valid will be material for further discussion in this paper. Whether or not the practical application, the actual method, is effective in teaching F.L. to American students, is currently a matter of much discussion.

The Pennsylvania Foreign Language Research Project found no meaningful relationship between scores earned by teachers in foreign language proficiency and class performance, even after three years with the same teacher. Insofar as this finding is valid, it does cast doubt on the ability of the method to measure teacher effectiveness based on its own standards. 23.

In investigating student motivation, the Pennsylvania Project examined 225 French and German secondary students
and found virtually no motivation to pursue language study beyond the second year. A Harris poll of parents whose children studied a F.L. in high school indicated that parents believe F.L. courses are the weakest offered in the curriculum and, if circumstances force a cutback in courses, F.L. should be the first to go. While this point may seem peripheral, it at least casts doubt on the effectiveness of a highly subsidized program to sell F.L. study to the American public.

Concerning the use of the language laboratory, the report "compared audiolingual and traditional methods of language teaching. They also compared three types of language labs. The portion of the report pertaining to language lab use indicate that there were no significant differences in results obtained between those classes using the labs and those that did not."25.

In summary, we may say that while it is difficult to state specifics because of the impossibility of securing firm evidence, there is now considerable ferment in the A-L M camp for change.
1.5.0. It is this interest in evaluation and change that is of practical importance to the relationship of linguists and F.L. teachers. Perhaps A-L M is now in the position that the more traditional methods were in at the start of World War II. Now A-L M is the new "traditional method" since, in our world of quick change, a decade of dominance can be a long time. The American linguists brought A-L M to the F.L. teachers and forced them to accept it. Now that the new shine has worn off and new practical problems are not being answered, linguists must go back to the drawing board and re-evaluate the theory.

1.5.1. In these next pages we will do just that: re-evaluate the theories of language which dominate American linguistic thought, the findings of the behavioral sciences which influence this thought, and, through this evaluation, arrive at a point for indicating a practical direction to follow and a viable language model for demonstrating this direction.
NOTES - CHAPTER I


4. Ibid.

5. Ibid.


7. Ibid.


2.0. Every language we learn after our first, we learn in terms of and by comparison with the first. Contrastive studies employed in F.L. learning follow this premise. The ideal teaching situation for the F.L. classroom, then, demands both pedagogical know-how and adequate linguistic description of both the student's language and the target language.

Pedagogy is not the proper object of the science of linguistics; adequate language description is. However, the question of adequacy as regards this description is not one of unanimity among practicing linguists.

2.1.0. Prior to Ferdinand de Saussure, linguistic research was confined to diachronic studies, principally the study of historical sound changes. Sir William Jones had pointed out the connection between Sanskrit and the Indogermanic languages in 1788. This discovery coincided with a broadening of interest in language studies, precipitated by the vast colonial and missionary activity then in control of the European imagination. Some of the scholarship turned
to word lists such as the *Lingvarum Totius Orbis Vocabularia Comparativa*, published by Simon Pallas (1744-1811) for Catherine the Great of Russia. The main thrust developed into the tradition of Rask, Grimm, Schleicher, Verner, Grassmann, and the *Junggrammatiker*. The result of this tradition was the conviction that language could be properly developed into a science and so share in the status enjoyed by the natural sciences in that day.

2.1.1.F.de Saussure entered this tradition himself as a student of historical linguistics. The work which established his scholarly reputation was on the primitive Indogermanic vowel system: *Mémoire sur le Système primitif des voyelles dans les langues indo-européennes*. But the far-reaching influence of de Saussure's scholarship really began with the posthumous publication of his *Cours de Linguistique Générale*.

The *Cours* established the notion that language study was not limited to an historical treatment but could be approached from time factor zero. Contrary to the *Junggrammatiker* who held that each part of a linguistic system must be considered in isolation, de Saussure saw language as a system in which each part is related to every other
part. To this fundamental, de Saussure added the notions of *langue*, *parole* et *langage* and the opposition of semantic content to linguistic signification and value.

History was to recognize that other Saussurean distinctions would have a serious impact on language scholarship; an impact that has not ceased to exert its force even up into our day. He saw the relationship between content and expression levels of language as a function rather than as an object and he demonstrated this relationship with his famous "two-faced" figure of *signifié* and *signifiant*. The resulting form is de Saussure's linguistic sign, uniting form and sound. Proceeding further into semantic theory, he posits a simple distinction based upon the linearity of the speech act as opposed to the psychology of the speech act. The former he termed "syntagmatic", the latter, "associative". (This last term was later changed to "paradigmatic" at the suggestion of Louis Hjelmslev.)

2.1.2. De Saussure's influence affected all of Structuralism but more immediately it resulted in the formation of the Prague School, *le circle linguistique de Prague*. Antoine Meillet was the original leader, but the list of the scholars associated with the Prague School reads like a Who's Who of Structural linguistics: Joseph Vachek, Prince Nicholas S.
2.1.3. F. de Saussure’s influence in the United States was seen in the work of Franz Boas and Edward Sapir; later in the research and publications of American Structuralism’s most famous figure: Leonard Bloomfield. While World War II brought Bloomfield’s scholarship into greater prominence, it placed the Prague School in very difficult circumstances. Trubetzkoy died after mistreatment by the German Gestapo; Martinet came to the United States after the war; Jakobson fled to Sweden ahead of the Nazis and came to America also in 1946.

This unusual situation placed the Prague School in America in opposition to the Neo-Bloomfieldians. Jakobson, after setting up a sound laboratory with Bell Telephone technicians at Columbia University, came to Harvard where he established a school with Morris Halle at the Massachusetts Institute of Technology. The M.I.T. empire has been taken over by Noam Chomsky since the late 1950’s.

2.1.4. American Structuralism took a somewhat different turn under Kenneth Pike and Eugene Nida at Ann Arbor, Michigan. These linguists became involved with the Wycliffe
Bible Society and the Summer Institute of Linguistics. The work of these men centered around the application of linguistic research to the learning and teaching of F.L., especially non-Indoeuropean languages, as a vehicle for Christian missionary activity.

2.1.5. Finally, we must mention Harold Lamb and his theory of language description based on Hjelmslev's *Glossomatics*. Lamb terms his work *Stratificational Grammar*.

2.1.6. This presents us, then, with the brief background we need for the investigation of the main forces at work on grammatical analysis and language description in the United States today, forces which have had and will probably continue to have strong influence on F.L. teaching: Structural Linguistics proper, Tagmemics, Transformational-Generative Theory, and Stratificational Grammar. The influence of each is far from equal but an investigation of each theory, with reference to the potential each holds out to the F.L. classroom, will follow.
2.2.0. **STRUCTURAL LINGUISTICS.** As noted above, Structuralism is the outgrowth of Indoeuropean comparative philology. The comparative philologists had seen language as sound in systematic change in phonetically determined contexts. By plotting the changes and the contexts, they established sound "laws". The 19th century philologists worked in a diachronic pattern. The 20th century Structuralists, following de Saussure, adapted this pattern to a synchronic one and tried to apply the same principles to morphology and morphological change. They also attempted to apply these principles to syntax but with much less success. The basic assumption of Structuralism may be summarized in this way: the systematic application of language elements to language patterns, plus the restrictions, would constitute the total grammar.

2.2.1. Following Bloomfield, Structural linguistics is behaviorist. We shall devote more time to the psychological basis of grammatical theory in Chapter III, but, at this point, the behaviorist note must be struck for the Structuralists since this note creates overtones in any F.L. teaching situation constituted according to structuralist principles.
As Dinneen¹ points out, Bloomfield's interest in Behaviorist psychology and his acceptance of the work of J.B. Watson is no indication that Bloomfield intended to make linguistics subservient to psychology or his theory of language dependant on Watson's theory of behaviorism for its relevancy. However, the choice for behaviorism was consistent with Bloomfield's strict empiricist method and the resultant break from de Saussure's and Sapir's deductive approach that this choice entailed.

The only useful generalizations about language are inductive generalizations. Features which we think ought to be universal may be absent from the very next language that becomes accessible. ... The fact that some features are, at any rate, widespread, is worthy of notice and calls for an explanation; when we have adequate data about many languages, we shall have to return to the problem of general grammar and to explain these similarities and divergences, but this study, when it comes, will not be speculative but inductive. ²

This empiricist, "scientific" approach to linguistics which marks structuralism has also been transferred to much F.L. methodology. "A scientific approach to language teaching uses scientific information; it is based on theory and a set of principles which are internally consistent. It measures results."³ Further, this scientific method will follow set "psychological" data. Robert Lado summarizes structural teaching method in these items
To bring into use something after it has slipped out of attention or use is recall. To hold something under prolonged attention or to reproduce it immediately involves memory span.

The speaker of a language recalls the words and sentence patterns he needs as he speaks. This represents complete recall. He must keep under attention or under immediate recall a length of sentence in order to be able to complete it properly.

The need and urge to communicate through language to fulfill the complex needs of a human being are a constant stimulus to use language. Urges, desires, wants, needs, ideals, and values result in conflicting motivations from which the will selects some to act upon and combats others through inhibition of practice....

The (speech) errors noticed are distortions of the speech of the speaker rather than variations from a standard that may not be the speaker's own speech. ...

A person knows how to use a language when he can use its structure accurately for communication at will, with attention focused on the content, recalling automatically the units and patterns as needed, and holding them for a normal memory span at conversational speed, noticing any errors that occur. 4.

2.2.2. In describing language, the Structuralist places emphasis on language as a speech event. "Writing is not language, but merely a way of recording language by means of visible marks."
The emphasis on speech in Structuralism is best reflected in the work in phonology and phonetics and in the detailed analysis of the phoneme. The Prague School, following de Courtenay and Trubetzkoy, considered the phoneme as a mental reality. Sapir, in the American School, continued this concept; but the main stream, following Bloomfield, maintains the existence of autonomous physical realities of sound units also termed phonemes. (While the difference in concept then is far from accidental, for the purposes of structural attitudes toward F.I. teaching, a digression into this controversy here would only serve to distract. The controversy about the concept of the phoneme is just one more manifestation of philosophical and psychological theory differences which exist in the field and these differences will be explored at length later.)

The work of the linguist in describing a language begins in isolating the phonemes, according to structural taxonomy. If possible, this isolation is accomplished through minimal pairs showing the phoneme in as many environmental variations as is practical. A completed study of this type results in an analysis which is
effectively a phonology of the word in the language. The phonemic analysis will show a finite number of meaningfully distinct oppositions in context relation. Features which do not signal meaningful distinctions are termed allophonic or in free variation, as e.g. aspiration in English stops.

Phonology is approached from a production (articulatory) point of view or from a reception (acoustic) one. The latter has made great strides in recent years with the advances in acoustic physics, (see 2.4.6.1.). The former type of analysis is the one commonly associated with the American giants of structural linguistics: Bloomfield, Twaddell, Hockett, Hill, Gleason, etc. It is also the analysis recognizable in the phonology section of some F.L. texts, as, for example, the structural series which originated from the Institute of Languages and Linguistics in Washington, D.C. during the early 1950's: Léon Dostert (French), Hugo Mueller (German), etc.

The emphasis on speech and sound also led logically to the utilization of native speaker informants both for the corpus to be analyzed in the language taxonomy as well as for the model to be imitated in F.L. drills in laboratory
or classroom. In the classroom, the native speaker was either a resource person utilized by the instructor, or, as became the case in many institutions, the instructor himself.

2.2.2.1. Structuralists following Bloomfield tended to minimize meaning in analysis. Bloomfield recognized the necessity of this position as flowing logically from his empiricist position. "Language study can be conducted without special assumptions only so long as we pay no attention to the meaning of what is spoken." However, in terms of the concept same/different, which characterized the description of all speech, some recourse to meaning was demanded. "As long as we pay no attention to meanings, we cannot decide whether two utterances are the same or different. ... Since we can recognize the distinctive features of an utterance only when we know the meaning, we cannot identify them on the plane of pure phonetics." Since the F.L. teacher follows the approach of same/different in teaching the meaningful distinctions of phonemics, some recourse to meaning was regularly used. Usually, this took the form of simple glosses for the lexical items employed in the minimal pairs.
2.2.3. For morphology and syntax, Structuralists turned to immediate constituent analysis. Morphology is concerned with constructions whose IC's may be bound forms, i.e. forms which cannot function without being joined with other forms. Syntax studies constructions whose IC's must be free forms.

The analysis proceeds by a series of binary cuts, proceeding from immediate constituents, through mediate, to ultimate constituents — the final stage of form structure analysis. Form classes are defined by composition (morphology) and distribution or function (syntax). Constructions are divided into endocentric (center plus optional expansion: e.g. ein guter Mensch) and exocentric (no center, no member may be considered as an expansion of any other: e.g. Jakob trinkt.)

Principles for the identification and classification of morphemes became a part of each manual on structural linguistics. (Cf. Hockett, Gleason, Dinneen, Hill, as well as Bloomfield.) Nida's Morphology stands as one of the most definitive structural works in the area.
2.2.3.1. Morpheme analysis utilizes the corpus of language data also. Some attempt at establishing glosses usually precedes since it is difficult to establish the identification of a morpheme as distinct from an allomorph without recourse to meaning. A consideration of the English plural morpheme and its variants, including ø and umlaut (deer, man), should make this fact evident. Meaning in morphology, of course, is not simply the sum of the individual morpheme meanings in the utterance. This might seem valid in the case of a compositum such as German Handschuh but would fall apart in treating lexical items such as steinreich or blutarm. Students in field work using structural methodology are exposed to such lists. Nida's work, as well as the companion workbook to Gleason's manual, present extensive samples of this type of exercise.

2.2.3.2. The presentation of syntactic structures in the language corpus inserts another dimension into the analysis: morphosyntactic relationships. Here the problem of intuition must be considered in making the IC cuts. For the native speaker trained in grammar, this is of small consequence. For the foreigner and the F.L. learner, the problem of recognizing morphosyntactic groupings is seldom minor. Isolating der Jungen heisst from the larger construction
Die Mutter der Jungen heisst Maria would readily demonstrate the problem, especially when this construction is contrasted with Der Junge heisst Mueller or Die Jungen heissen Mueller. Discontinuous elements in syntax, such as separable prefix verbs in German, prepositions used as verb compliments in English, and modal plus infinitive constructions in both German and English indicate further examples of the necessity for some native speaker intuition in making the cuts.

Idioms are a further problem in morpheme analysis. English: raining cats and dogs, Dutch treat, get smart, go for broke; German: brotlose Kunst, die Katze im Sack kaufen, wo die Füchse gute Nacht sagen; French: j'ai vingt ans, il fait beau, bon marché, etc. Without some meaning, the guessing game can produce either no worthwhile results or can lead the analysis into unproductive channels.

2.2.3.3. The application of IC analysis to F.L. learning produced apparatus for the isolation of inflections for number, gender, case, mood, tense, degree, and person. Where surface structures are not marked for number (sheep-sheep), case (it-it, you-you, das Kind-das Kind), tense (hit-hit-hit), etc., the morpheme would not be apparent
and would require additional information. This seems to be an inherent limitation of any item-arrangement grammar in language description. Our observation would apply to the use of IC analysis for syntactic as well as morphemic units. In practice, there is no attempt at handling all the syntactic (exocentric) construction types. The "main" ones are set up as patterns and drilled in the F.L. class. "Main" here is obviously the choice of either instructor or textbook author.

2.2.3.4. Since suprasegmental morphemes do not occur as linear discrete elements but simultaneously with the realization of the phonetic shapes on the morpheme level of utterances, they pose a distinct problem in the analysis. Bloomfield chose to handle this problem as a two dimensional space in which other types of morphemes are arranged relative to each other. Hockett suggests considering the suprasegmentals as comprising parts of morphemes much in the manner of vowels and consonants but not as readily analyzable.

This problem also occurs in questions of ambiguity. In utterances such as Fighting women can be dangerous.
the only workable solution for the item-arrangement grammar is recourse to suprasegmentals.

The practical solution for suprasegmentals in the F.L. classroom has been that suggested by the Structuralists. Drilling of intonation patterns for a chosen number of construction types presents a model which can be applied to the student's native patterns in contrast. Obviously, the more subtle the differences, the more problems surface. Fossilization of native dialect suprasegmentals obtains here as well. This question for western F.L. learners reaches its peak challenge in the study of tone languages where the ambiguity problem becomes more common and the importance of function of suprasegmentals even more significant. Mandarin Chinese, for example, has four tones: level, rising, falling-rising, and falling tones. 買 'buy' and 買 'sell' differ only in that the first is realized with falling-rising tone; the second with falling tone.

2.2.4. Structuralists are split in their grammatical practice between Item-Arrangement (IA) and Item-Process (IP) grammars. Bloomfield himself, in his Language chapters on grammatical forms and morphology, follows IA for the most part and seems quite uncomfortable
when he seems confronted with IP situations. For example, in discussing English plurals, he notes problems with certain nouns (knife, mouth, house, etc.) which do not seem to follow IA rules he has set up for their particular phonologically conditioned environment. He then goes on to explain:

The actual sequence of constituents, and their structural order are a part of the language, but the descriptive order of grammatical features is a fiction and results simply from our method of describing the forms; it goes without saying that a speaker who says knives, does not "first" replace /k/ by /v/ and "then" add [-z], but merely utters a form (knives) which in certain features resembles and in certain features differs from a certain other form (namely knife). 12.

2.2.4.1. Following Hockett13, we may summarize the IA and IP grammars in this way: Item-Arrangement grammars begin with an analysis of the linguistic forms as to simple or composite. All simple forms are morphemes; all composite forms are made up of multiple IC's and stand in constructions and form constitutes. Some morphemes (e.g. connectives) may be viewed as markers rather than as participating in a construction.

IA next lists the constructions and the possible positions they may take in the language. Markers are also specified. For each position we list the morphemes
and the constructions which can occur in that position.

Environments must be defined in the IA description since morphemes, as phonologically conditioned allomorphs, are seen in terms of their environment. (e.g. plural allomorphs in English).

Where ambiguous constructions exist, an a priori decision based on meaning must be made before the analysis may continue.

The grammatical pattern, as just described, plus the phonological pattern, complete the description of the language.

2.2.4.2. For Item-Process grammatical description, it must first be determined whether the linguistic forms are simple or derived. Simple forms are roots. Derived forms consist of one or more underlying forms to which a process has been applied. (Hence, Item-Process.) The underlying forms are the IC's of the derived form. Some of the phonemic material of the derived form may be a marker of the process, as e.g. declensional endings: puer, pueri, puero, etc.
We next list the processes and the positions involved. For each position we determine the list of roots which may occur in that position as well as a list of processes which produce forms that may occur in that position. (N.B. the similarity to IA here.) A process may have more than one marker (as above) and a root may appear in more than one phonemic shape, as e.g. vox, vocis; dens, dentis; ager, agri; etc. Zero markers (number, case, etc.) are allowable.

All phonemic material of the utterance is then either root (item) or process.

2.2.5. SUMMARY OF STRUCTURALISM AND F.L. TEACHING. The main contributions of structural linguistics proper to F.L. teaching I see as: Structuralists

1. attempted to place language analysis and language teaching on an empirical, scientific basis.

2. attempted to apply current psychological and anthropological studies to language learning.

3. counterposed dialect study and language change to the principles of prescriptive grammar.

4. defined form classes from the standpoint of environment rather than by a philosophical statement about genus and species.

5. stressed function in analysis.

6. stressed the spoken language over written; speech over translation in the F.L. classroom.

7. attempted a precise description of sound production through articulatory phonetics.
8. used native speaker models.

9. developed a system of autonomous phonemes and the very concepts of phoneme and morpheme.

10. popularized phonetics and phonetic symbol systems, such as IPA and Trager-Smith.

11. facilitated the composition of comparative grammars as teaching tools.

12. introduced greater economy into the language-learning process.

13. de-emphasized meaning in language study as the weakest link in the speech chain because of its arbitrariness.

14. simplified paradigm study by the analysis of allomorphs rather than by using the class-plus-exception method of traditional language teaching methods.

15. asked many questions about language even though they (Structuralists) were not able to provide suitable answers for all the questions.

2.3.0. TAGMEMICS. Tagmemics has been termed a slot-and-filler grammar. The system was developed by Kenneth L. Pike and his students at the Wycliffe Bible Institute and the Summer School of Linguistics. Both organizations are still very much in existence.

A priori, we may note the advantage Tagmemics has over other current methods of description when it comes to F.L. instruction. Tagmemicists have published books and articles describing about 300 languages. For many of these languages, since they are spoken by relatively few language communities and are not generally familiar
in traditional groupings, the only existing analysis is the tagmemic analysis. Compared to Transformational-Generative grammarians, for example, who have devoted the brunt of their work to descriptions of English, this fact of Tagmemics' connection to F.L. teaching, ab initio, is at least a surface advantage.

Pike's main linguistic interest is in practical problems and he has applied his theory almost exclusively to practical problems. In an interview which this writer had with Pike at the L.S.A. annual meeting in Atlanta last year (1973), Pike reiterated this intention. For him, theoretical linguistics flows readily into applied linguistics, F.L. instruction in particular. Quite obviously, this ready transfer is not a quality of most T.G. grammarians writing today.

During the question and answer period following his paper "Crucial Questions in the Development of Tagmemics—the Sixties and Seventies," delivered at the 1971 Georgetown University Roundtable in Linguistics, Pike stated, "I'm interested in truth about man, about how language is related to man, about how language is related to behavior. I wouldn't ever grant that I'm only interested in language." We stress this point to demonstrate that
Pike's first concern is the practical application of his science to human problems, not the least of which he sees in communication and language learning. I believe, both from my conversations with the man, as well as from sample statements such as the one quoted above, that Tagmemicists would be agreeable to a synthesis with other grammatical descriptions if this synthesis would function effectively in the F.L. classroom.

2.3.1. Tagmemics views language as a structured collection of *particles*, in a sequence of *waves*, and related in a *field* pattern. The use of *particle*, *wave*, and *field* sets Pike's concept of tagmeme immediately apart from that used by Bloomfield in 1933. Particles may be phonemes, words, sentences — even entire literary works such as a poem. "Tagmemic theory is one attempt to integrate all particles in a heirarchy unbroken from sound to sonnet."  

Since language is experienced as a continuum and not as a series of particles, language must be seen also as *wave*. The wave component enables us to perceive particles as peaks of wave-like movement. This concept can be seen as having similarities with the physical realization of sound as wave.
The field component enables the analyst to center more on relationships among particles rather than on wave or individual particles themselves.

We may summarize this point by saying that utterances are composed of units which are made up of recurring sections of language, each having meaning in itself. Elements are discrete and independent; however, the particles do overlap and so independence is often overshadowed. Form cannot be described independent of meaning. What we are concerned with in treating particles, waves, and fields is form-meaning composites. Every linguistic sign is defined by its meaning, form, and distribution. The three resulting modes (feature mode, manifestation mode, distribution mode) are equated to particle, wave, and field.

As I see language structure, we need the three views (particle, wave, and field), all preserved in our total descriptive statement, to approximate more closely the manner in which language operates as a behavioral structure in an active (language) community. 18.

2.3.2. As Structuralists, Tagmemicists analyze language into phonology, lexicon, and grammar. Each of these sets up a hierarchy: phonology has the phoneme or contrastive features of the phoneme as its minimal unit(s); lexicon
deals with morphemes; grammar with tagmemes. While the tagmememe correlates function slot and filler class, it may consist of a single phoneme, as seen above (minimal tagmememe), or as a morpheme sequence (hypertagmememe), or as a construction containing multiple fillers (syntagmememe). As actual tagmememe sequences, syntagmememes do not correlate slot and filler.

Another statement on the definition of the tagmememe is given by Velma Pickett and Benjamin Elson in their Introduction to Morphology and Syntax:  
a grammatical unit which is the correlation of a grammatical function or slot with a class of mutually substitutable items occurring in that slot."

Within the system of phonology, lexicon, and grammar, another division is made into emic and etic units. This distinction is potentially useful for an application to F.L. learning since etic units are the early approximations and would seem to contain considerable fossilization and first language influence, while emic units are seen by the native speaker as distinctive.
When an investigator begins work on a language which is new to him, he makes his notes chiefly in terms of his background, influenced somewhat by the structure of his own language, others he has studied, and his previous linguistic training. These early notes, observations of an outsider are etic (units). As analysis continues, the investigator seeks to discover the emic units, the units and groupings that are significant to the structure of the language itself. 19.

The above paragraph may be seen quite readily as an accurate description of the learner in the F.L. classroom; heavily influenced by his background experiences and academic preconceptions at first. If he moves on to anything approximating native-speaker proficiency, he does so through the medium of recognition of the emic units.

2.3.3. Tagmemics, as a practical tool for language analysis, is a vital discipline since the field workers from the Summer School of Linguistics report back their successes and problems in language study. These reports result in a continuing revision of the theory. Two examples of modification are the matrix, developed by Pike for showing the relationships between constructions, and Longacre's attempt to incorporate transformational rules into the tagmemic grammar system.
Pike's matrix is simply an arrangement of constructions into columns, much like a language paradigm. Clause types, for example, may be shown in one column while clause elements (subject, object, etc.) are shown in subsequent columns. The resulting patterns, incorporating plus and minus symbols to indicate necessary or optional elements, bear some resemblance to a feature analysis. Moreover, matrix theories can be extended with the use of operators (negative, passive, interrogative, etc.) which, when applied to the matrix, transform the entire series of constructions according to the working of the operator chosen.

Longacre's work with transforms resulted in his 1964 *Grammar Discovery Procedures*, which incorporates string constituents and the basic tagmeme unit but supplements the grammar with transformational procedures. Elson and Pickett had seen this also by 1962. Longacre himself as early as 1960. As Longacre puts it, "Generative grammar has brought forcibly and commendably to our attention the usefulness of grammatical transforms as one means of expressing relations between sentences." Pike too saw this potential for a tagmemic-transformation synthesis but only with modification of both theories. Whether this modification would agree with Chomsky's *Syntactic*
Structures is debatable. After Aspects, there is no question that a theoretical synthesis is not immanent. A practical synthesis, which is what the Tagmemicists would pursue in any event, may have potential.

2.3.4. As structural linguists, Tagmemicists see language as goal-oriented behavior. (A very obvious point of departure from the current T.G. camp.) As such, language may communicate a specific message (Do it!), the speaker's attitude toward the listener (Please do it.), or toward the message (Rain today. Rain again.), a function of social intercourse where message actually becomes secondary (Haven't we met before?), or as a bridge over time gaps, e.g. small talk (Nice weather we're having, isn't it?).

Quite obviously, Tagmemicists and T.G. grammarians employ different terminology. However, difference here should not be exaggerated. Linguistic science does employ an extensive terminology, seen by the uninitiated as a jargon or argot. Both T.G. grammar and tagmemics use many traditional grammar terms. It is necessary to read specific works in order to grasp terms and their extension in any science. We should expect this principle to obtain
A specific utterance such as — Joe forced John to steal the car. — would be handled differently by grammarians from each school. Both see the structure as containing two clauses. Tagmemics applies the wave component to show the overlapping of the two clauses in which John is the subject of to steal and the object of forced. T.G. grammar would analyze the sentence into at least two deep structure groups.

Joe - force + past - something
John - steal - past - the car

Then, by a process of embedding, pronoun deletion and "to" insertion they would arrive at an approximation of the surface utterance.

If we question whether we can reconcile empiricist behaviorist theory with T.G. grammar, the answer would have to be an obvious NO. However, we ask next whether we can reconcile rationalist theory with Tagmemics. Now the answer is POSSIBLY.

We must examine concepts on a) language universals, b) innate linguistic powers, c) competence and performance, d) infinite creativity.
a) There is little in Tagmemics which would militate against a workable contrastive analysis, such as might be employed in showing language universals.

b) As a method, there is little in Tagmemics which would exclude the rationalist theory of learning. Practically speaking, we are all attempting to reach the deep structure (albeit terminology difficulties) and to describe linguistic constraints in workable form. As linguists and language teachers, however, we realize that if we attempt to build all the possible constraints into a linguistic rule, we will go out of our minds. Such are the problems of code in general and dialect in particular. Perhaps some application of Bernstein's ideas on "restricted code" will have application here. We shall pursue that possibility in greater depth later.

c) Tagmemics can be viewed as an approach for building linguistic competence: an internalized set of rules which will:

1) set the hearer to accept or reject utterances as well-formed or ill-formed.

2) enable the speaker in time to create a limitless variety and infinite number of well-formed (grammatical) utterances.

In teaching F.L., this thought could be applied to using man's innate bent for language in such a way that the rules will be internalized - not just memorized. A worthwhile question remains about whether these rules will function unconsciously.
d) Infinite creativity, as applied to F.L. learning, is a goal of the linguistic theory. If the set of tagmemes we analyze can be used to generate a number of sentences - given the possibility of variation within the limits of the constraints involved - we may achieve some measure of our goal.

Granted, there is a measure of superficiality in the comparisons here presented between tagmemics and T.G. grammar. However, since I believe a functional synthesis to be of specific value for the F.L. teacher and because Tagmemicists themselves seem to be working toward a type of functional synthesis, the point should be included for consideration at this stage of our work. I have mentioned the areas I see as possessing the greatest potential for a synthesis which would be of practical use for F.L. instruction.

2.3.5. Finally, the use of the term "slot" to refer to the tagmeme can be confusing since it implies a purely physical order. As already mentioned, the tagmeme is a grammatical function and the units which perform that function. However, the notion of "slot" continues to be quite graphic since Tagmemicists are interested in
explaining all the potential functions of a specific construct and, by their analyses, determine what may occur in this grammatical function or "slot".

In determining the possible subjects of a German sentence, for example, we might set up the following:

0. der alte Mann....
1. der Alte....
2. Er....
3. Vater....
4. Peter....
5. der Mann, dem ich die Bücher gegeben habe,....

In each example, the next syntactic position or "slot" will be filled by a finite form of the verb. For form and function in German structure, then, this tagmeme will follow certain rules. Stating these rules will set up the "slot and filler" pattern or will define the possible particles which may occur in this position and the relationships which result (wave and field).

The object is to present as thorough a listing of pattern types as is feasible within the boundaries of an economical description. Granted, the system is pattern-
oriented and, as such, limited to what we consider a set number of patterns. Practically speaking, in the composition of F.L. textbooks as currently concieved, there has to be limiting of material presented and so there must be a practical choice in terms of the patterns to be presented.

2.3.6. SUMMARY OF TAGMEMICS AND F.L. TEACHING. We may list the following additions by Tagmemics to the Structuralist contributions to F.L. teaching.

1. The "slot and filler" grammar which is really the basis for the seeded pattern drill.

2. The theoretical power to describe particles from distinctive feature, through utterance, up to a complete literary work.

3. The division into emic and etic units as an indicator of F.L. competence.

4. The matrix theory and the use of operators to show sentence transformations.

5. Tagmemics presents the best path currently for a synthesis between Structuralism and T.G. grammar; especially due to the eclecticism of Pike and Longacre. 27.

6. Tagmemics presents an approach to behaviorism which is closer to rationalism and further from empiricism than main line Structuralism.

7. Tagmemics has a history associated with F.L. analysis and teaching and so is immediately adaptable to many classroom situations.

8. The vitality of Tagmemics through the on-going work of the Summer School of Linguistics and the Wycliffe Bible Translators.
2.4.0. TRANSFORMATIONAL-GENERATIVE GRAMMAR. The inclusion of T.G. grammar as a major linguistic contribution to F.L. teaching may certainly be questioned, both from the very limited work done in preparing instructional materials based on T.G. theory as well as from the very negative statements of some leaders in the T.G. school. However, no study of applied linguistics and F.L. teaching could be considered current without an extended treatment of the actual and potential contributions of T.G. grammar.

The expression "very limited" is used above to indicate the applications of T.G. theory as contrasted with those of American Structuralism. Certainly work has been done in applying T.G. theory to language teaching. Specifically here we should mention DiPietro, Bach, Jacobs and Rosenbaum, Diller, Lehmann, and Bierwisch — and the list is not meant to be exhaustive. Many of the texts now in use are directed toward the teaching of English specifically, as the work of Jacobs and Rosenbaum would indicate. However, this research, as well as that directed specifically toward F.L. teaching, have practical application in the F.L. classroom.

The statements of Chomsky himself concerning the application of T.G. theory to language teaching are not
calculated to make F.L. teachers look to T.G. grammar for much practical direction. At the Northeast Conference on the Teaching of Foreign Languages in 1965, Chomsky began:

I should like to make it clear from the outset that I am participating in this conference not as an expert on any aspect of the teaching of languages, but rather as someone whose primary concern is with the structure of language and, more generally, the nature of cognitive processes. Furthermore, I am, frankly, rather skeptical about the significance, for the teaching of languages, of such insights and understanding as have been attained in linguistics and psychology. ... It is difficult to believe that either linguistics or psychology has achieved a level of theoretical understanding that might enable it to support a 'technology' of language teaching. ... Although it would be difficult to document this generalization, it seems to me that there has been a significant decline, over the past ten or fifteen years, in the degree of confidence in the scope and security of foundations in both psychology and linguistics. I personally feel that this decline in confidence is both healthy and realistic. But it should serve as a warning to teachers that suggestions from the 'fundamental disciplines' must be viewed with caution and skepticism.

Later, in the same paper, Chomsky notes:

In general, the willingness to rely on 'experts' is a frightening aspect of contemporary political and social life. Teachers, in particular, have a responsibility to make sure that ideas and proposals are evaluated on their merits, and not passively accepted on grounds of authority, real or presumed. The field of language teaching is no exception. It is possible — even likely —
that principles of psychology and linguistics, and research in these disciplines, may apply insights useful to the language teacher. But this must be demonstrated, and cannot be presumed. It is the language teacher himself who must validate or refute any specific proposal. There is very little in psychology or linguistics that he can accept on faith. 28.

2.4.1. T.G. grammar in general and Noam Chomsky in particular have drawn strong negative reaction from elements of the Structuralist school. We have already alluded to Charles Hockett's The State of the Question (Note 27). A strong negative reaction from one of the "old Men" of structural linguistics who is also a professional language teacher can be seen in the following from W. Freeman Twaddell:

One of the best known doctrines is that of A.N. Chomsky, which has appeared in several slightly different versions, in formulations that are superficially ingratiating, in rhetoric that is verbal overkill, and in a jargon that, whether intentionally or not, resists paraphrase into statements susceptible to logical analysis. 29.

In spite of the skepticism of Chomsky himself and the very negative reactions of some F.L. teachers currently in the field, as well as the technical and terminological problems inherent in the application of T.G. grammar to the F.L. classroom, we do believe that this theory offers much potential for language teachers now and for the future. In our attempt at demonstrating this proposition, we are
not unaware of difficulties. Some of these difficulties are contained in the concept of change; others in the acquisition of new terminology; still others in the application of a still incomplete description to an environment where absolute beginners are involved — the F.L. classroom. While this writer believes that the T.G. model does hold out viable solutions to questions of language ambiguity, language acquisition, linguistic diversity, etc., there remains a giant step between linguistic analysis and language teaching. Models alone are not sufficient. At the same time, it does not seem consistent for a linguist who is also a language teacher to deny with his teaching method what he affirms in his linguistic theory. While real problems will remain, therefore, it does not appear inconsistent to employ practical conclusions in a working hypothesis. A workable theory, properly understood, will help immediately in solving practical cases in the language classroom.

2.4.2. The necessary starting point in relating T.G. grammar to F.L. teaching is in a theory of knowledge, since this point is the most serious contention between T.G. and structural grammarians and the axis around which the entire theory of grammar revolves.
Following Chomsky's reasoning, there is evidence of certain central nervous systems which control our processes of perception. These systems are relevant to the acquisition of knowledge since they are determined by the organism interiorly — innately — to govern specific areas. This means that perception is largely determined by the system rather than the system being determined by perception. This is the basis of the rationalist/behaviorist controversy which we shall pursue in the following chapter.

Throughout this discussion, we must keep in mind an adage of the Scholastics: "qui nimis probat, nihil probat." (He who proves too much, proves nothing.) Mental organization is innate. These systems provide structures which act as a precondition for linguistic experience. However, we do not understand many of these processes nor can we assign with any certainty specific functions to specific areas of the organism, as, e.g., language to one specific area of the brain. Studies with aphasia done by Jakobson and others, as well as work in psychosurgery by Dietrich Blumer of Harvard and Elliot Wallenstein have presented very interesting data, but the data is admittedly not yet sufficient to draw any real firm conclusions.
2.4.2.1. Chomsky has also indicated repeatedly how the surface structure does not immediately reflect the deep structure; i.e. the level of discourse does not always reflect the level of concept. The rules determining the relation between deep and surface structures are abstract and thus not easily brought to consciousness. Since empiricists per se cannot accept such an assumption, Chomsky uses pairs of examples which have now become a trade mark of his writing.

a) John was easy to please.
b) John was eager to please.
A) I expected John to leave.
B) I persuaded John to leave.

While the surface structures of each pair of utterances seem very similar, an attempt at paraphrase shows the immediate problem.

a) It was easy to please John.
b)*It was eager to please John.
A) I expected that John would leave.
B)*I persuaded that John would leave.

The semantic trigger sets off a series of deductions which leads us to see not that there is simply a constraint against
using these terms in paraphrase contexts, but that the structure of the pairs of utterances is actually different. The first pair as an active/passive contrast; the second pair as containing embedded structures not immediately apparent in the surface structure.

2.4.2.2. For Chomsky, grammar is a machine for generating all of the grammatical and none of the ungrammatical sentences of a language. The number of sentences which may be generated is numerically infinite, given the factor of recursiveness in language and the creative process which produces utterances in natural languages.

The fact that many of the possible sentences are too difficult for many speakers should not come as a surprise. Basic arithmetic operations, if extended beyond certain limits, are impossible for most people to do "in their heads." The simple operation of multiplication becomes a job for much paper and many pencil marks when we are asked to raise a three digit number to the tenth power.

A similar effect is produced by this recursive factor in language where sentences are embedded within other sentences. Consider the following sentences:
Wanda's liking me was a fact that it was difficult for me to comprehend after confronting the evidence of the past evening.

While easily understood, this sentence does demand more than usual concentration to be assimilated. Variations, through paraphrase, produce interesting results. For example, the following paraphrase is more readily comprehended by this reader.

After confronting the evidence of the past evening, it was difficult for me to comprehend that Wanda liked me.

One other paraphrase, and the message becomes obscured.

Wanda's liking me was a fact that for me to comprehend after confronting the evidence of the past evening was difficult.

Certainly, it would not be difficult to imagine many other utterances, containing embedded sentences and discontinuous elements, which elicit similar or more severe comprehension problems. These utterances may still be grammatical.
2.4.2.3. The criterion of grammaticality here is acceptance by the native speaker.

Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge to the language in actual performance. This seems to me to have been the position of modern general linguistics, and no cogent reason for modifying it has been offered. 31.

Grammatical, then, does not mean "occurs in a corpus" since projected new sentences can be grammatical, nor does grammatical mean "meaningful", at least not in the semantic sense (Sincerity congeals abundantly.), nor is grammatical limited to probable sentences (We bought a crystal car.).

The concept of grammaticality applied in this way sets up degrees of grammaticalness. 32. The more syntactic restrictions are ignored, the less grammatical the sentence based on our criterion. (John ate and I consumed the cake.) The more class membership is violated, the less grammatical the sentence. (Without runs silently.) The more semantic restrictions are ignored, the less grammatical the sentence. (The light gleamed darkly.)
Within the framework of natural languages, it becomes fairly obvious that degrees of grammaticalness will not be viewed by each native speaker in the same way. In this context, we must weigh the peculiarities of ideolect and dialect as well as the degree of sophistication which makes the interpretation of metaphor more or less obvious.

2.4.3. A system of constraints operates to restrict some utterances. These restraints are either psychological or grammatical: the former based on the limits of the human power to conceptualize; the latter on the rules of specific grammars.

The operation of psychological constraints can be seen in the limit we place on the length of utterances in conversation. This constraint of sentence length would not apply in the same way to a written context since here the boundaries of the constraint would be altered. Syntactic complexity would also obtain within this criterion.

Grammatical constraints filter certain occurrences and co-occurrences. The operation of the English auxiliary rule, for example, allows the speaker to elect certain optional elements: emphatic, perfective, progressive, modal. It does not allow for one of these elements to be elected more than once for each auxiliary. Nor would
recourse to recursiveness help, since we would have to apply the whole rule again. Yet the constraint of the English auxiliary rule does not obviously apply to all speakers of American English, since in some areas of the United States, utterances such as *I might could do that later* are quite common. The historical fact that such occurrences of double modals were common generally at an earlier state of spoken English does not seem to affect the question of constraints, even though it may shed light on the obvious deep-structure difference in the rule or the application of the rule.

Rules for subject-verb agreement block certain co-occurrences: *he am, *I is, *she do, etc. Where such utterances occur, they are judged nongrammatical. Where utterances of this type are manifestations of dialect speech, they are judged nonstandard. The concept of standard, however, is not always clear and should not confuse our criterion of grammaticalness. For the F.L. teacher, where questions of standard/nonstandard arise, recourse to the criterion of grammaticalness should be tempered by considerations of linguistic diversity and levels of grammaticalness.
2.4.4. Germane to this idea is the distinction between competence and performance.

There is, first of all, the question of how one is to obtain information about the speaker-hearer's competence, about his knowledge of the language. Like most facts of interest and importance, this is neither presented for direct observation nor extractable from data by inductive procedures of any known sort. Clearly the actual data of linguistic performance will provide much evidence for determining the correctness of hypotheses about underlying linguistic structure, along with introspective reports (by the native speaker, or the linguist who has learned the language). This is the position that is universally adopted in practice, although there are methodological discussions that seem to imply a reluctance to use observed performance or introspective reports as evidence for some underlying reality.

2.4.5. The operation of the grammar proceeds through three operations: phrase structure, transformations, and morphophonemic (phonological) rules.

Phrase structure grammar is defined by a finite set of initial strings in the form of rewrite rules, which rules may be either context-free or context-sensitive. Optional elements are placed in parentheses; multiple optional elements are stacked and placed in brackets. Each string of the sequence in phrase structure is derived from the proceeding string by the application of one rule.
The output of the grammar is called a terminal string and is either the last line of a terminated derivation or the end result of a tree diagram or P-marker. The terminal string contains all the elements of the kernal utterance under analysis, but not necessarily in their grammatical order.

2.4.5.1. The second part of the grammar is the transformational component. This component contains rewrite rules which operate on terminal strings and their underlying structure to produce sentences through the operations of addition, deletion, substitution, and permutation. Obligatory T-rules are required by the grammar to produce any grammatical sentence. (tense, affix, for some structures DO-insertion, etc.). Optional T-rules are required to produce non-kernal type sentences. If any optional transformations are applied, the sentence is called a derived sentence.

2.4.5.2. The third part of the grammar is called the morphophonemic or phonological component containing rewrite rules which operate on the kernal and derived sentences to produce surface utterances.
To summarize, we have now suggested that the form of grammar may be as follows. A grammar contains a syntactic component, a semantic component, and a phonological component. The latter two are purely interpretative; they play no part in the recursive generation of sentence structures. The syntactic component consists of a base and a transformational component. The base, in turn, consists of a categorial subcomponent and a lexicon. The base generates deep structures. A deep structure enters the semantic component and receives a semantic interpretation; it is mapped by the transformational rules into a surface structure, which is then given a phonetic interpretation by the rules of the phonological component. Thus the grammar assigns semantic interpretations to signals, this association being mediated by the recursive rules of the semantic component.

2.4.5.3. The treatment of the phonological component in the grammar leads us quite logically to one of the more controversial aspects of T.G. theory: generative phonology.

2.4.6. GENERATIVE PHONOLOGY. As we indicated at the beginning of this chapter, the emphasis of American Structuralism has been on phonology. Elaborate procedures often accompanied the search for the phonemes of a language, much as we described earlier as a phonology of the word.

Generative phonology begins by rejecting the level of the phoneme. Generative phonologists reject taxonomic
or autonomous phonemes: those segments which contrast on the surface. These taxonomic phonemes are opposed to systematic phonemes. In systematic phonemics, a word (or morpheme) is assigned an underlying form on the basis of patterning of morphological and syntactic sets in the language. For example, in German the word for 'death' is assigned the underlying form (tod) and the word for 'dead' is assigned the underlying form (tot). In a German grammar with underlying forms, then, we would find the listing for German 'death' as (tod), a form otherwise only recognized in the oblique cases (tode,todes). In taxonomic phonemics, we would posit the archiphoneme /T/ to cover both examples, since all German stops are - VOICED in final position. In other words, the taxonomic phonemes /d/ and /t/ are neutralized in final position to /T/ because there is no contrast on the surface; the systematic phonemics assigns an underlying form to preserve a contrast in the deeper structure.

2.4.6.1. In his recent monograph on *Generative Phonology*, Sanford Shane discusses the relationship between systematic and taxonomic phonemics in these terms:
A systematic phonemic representation will be equivalent to a taxonomic phonemic one unless there is good reason to deviate from the latter. Morphological alternations or pattern congruities lacking in a taxonomic phonemic representation are good means for positing a more abstract representation. For example, the systematic phonemic (underlying) representation for the word *pass* would be */pæs/*, which is equivalent to a taxonomic phonemic representation, but the systematic phonemic representation for the stem part of *electricity* would be *elektrik*, and not the taxonomic phonemic */elektris/*, as there is morphological evidence for deriving some occurrences of *s* from *k*.35.

2.4.6.2. In commenting on the same question, Winfred Lehmann admits the problems which the phonemic approach has led grammarians and language teachers into. The concepts of 'free variation' and 'allophone' led us to accept as phonemic entities items which are acoustic and articulatory anomalies. As such, the voiced realization of voiceless stops in voiced surroundings: *bottle*, *butter*, *latter* (which then destroys the minimal pair with *ladder*), is not difficult to accept since the articulatory apparatus is identical except for the addition of voicing. However, when we inject another realization of the phoneme — that of a glottal stop — we inject serious articulatory and acoustic differences, differences which autonomous phonemics cannot actually handle.36.
2.4.6.3. Yet, generative phonology too is not without its problems of description, specifically in matters of economy. As Lehmann rightly admits:

...dismissing an autonomous phonemic representation leads to exceedingly complex representations of phonology, as a glance at the representations in Chomsky and Halle's *The Sound Pattern of English* may indicate,...

In evaluating this difficulty honestly, we must realize that generative phonology is still in its beginning stages. As F.L. teachers, however, it seems that the value of generative phonology for language teaching remains to be demonstrated. We shall indicate some limited use of generative phonology for the F.L. situation in Chapter IV.

2.4.6.4. Speech spectrograms furnish us with additional information relevant to this discussion. To the novice acoustic phonetician, it is next to impossible to ascertain the points on the spectogram where one speech sound ends and another begins. The instructor may indicate the onset of voicing or the height of first formants as an indicator of vowel quality, but the actual speech sounds seem to blend into one mass. Yet, in the phonemic representation, we set these
"discrete" elements up as having autonomy. As speakers we tend to view the production of speech as a compositum of discrete elements arranged in linear fashion. Whether this is a cultural conditioning based on our association with reading and writing or not, cannot be proven. To be sure, the speaker realizes that he can change the "word" by changing a "letter". Thus: cat, rat, mat, gat, sat, fat, etc.

Another piece of information which the spectogram gives us is the fact that no two utterances are identical. In this sense, then, each utterance is an individual "creation". Yet, the individual listener does not perceive these differences or, if he does, they only seem to affect a conscious response when the difference is sufficient to signal a meaning difference. This would equivalently paraphrase concepts of phoneme, allophone, and free-variation: phonemic differences are noted by the listener; alphonic and free-variation differences are regularly not consciously noted except, perhaps, as indicators of a specific speaker, e.g. recognition of a friend's voice.

This meaning difference signal, termed phonemic or meaningful distinctive, included such features as pitch, stress, and intonation, insofar as these features signal a meaning difference.
Now, since no two utterances are exactly the same, this fact would seem to indicate that we cannot actually isolate autonomous phonemes since the only way to realize difference is in the context of sameness. Understood as a given, however, is the realization that while the sound spectogram does not indicate this sameness, the speaker-listener must of necessity operate in a context of same/different or language communication would be an impossibility. This same/different value is absolute to the acoustic apparatus; relative to the human speaker. The presence or absence of aspiration constitutes obvious phonetic difference. However, for the English speaker/hearer, this aspiration is not generally meaningful, although aspiration is phonemic in many other languages, the Indo-Aryan languages, for example.

2.4.6.5. It is the mark of the native speaker that he is able to encode and decode the phonemically relevant sounds of his language. Foreign speakers often find a serious problem when the target language they are seeking to master contains phonemic distinctions which their native language lacks. A German learning English experiences regularly a problem with interdentals. Since the closest equivalent the German can choose from his native phonology is either an alveolar stop or an alveolar fricative, he
may realize English 'this' as either 'dis' or 'zis'. Japanese speakers traditionally have a similar problem with 'r' and 'l' sounds. Since French has a voiceless 'l', as in people, a French speaker may also experience difficulty with English laterals. An American learning German will regularly realize initial 'ts' (Zeit) as 'z' rather than 'ts', not because there is no like consonant cluster in English (cats), but because the cluster never occurs initially. The listener must be able to ascertain sufficient phonetic material to achieve perception. How much of this is actually encoded phonetic material and how much is perceived in anticipation is involved in questions of redundancy and linguistic entropy. Certainly we can see the operation of two levels: one level of encoding or pronunciation, which is subject to the scientifically demonstrable observations noted above; the other, the level of decoding, where the listener brings more to the experience than the raw phonetic material received from the speaker. Since this fact is proper only to natives and, by degrees, to non-natives with learned proficiency, it adds another dimension of thought to the F.L. learning situation. Certainly the T.G. theory of rule abstraction offers a better hypothesis here than an approach calling for memorization and learned behavior.
2.4.6.6. Consonant with their view of language universals, (with which we shall conclude this section), T.G. grammarians seek universality in phonological description also and concern themselves with all humanly relevant language sounds. (As do phonetic systems such as I.P.A., etc.) The child learning his first language has the potential accorded him innately to reproduce any human meaningful language sound. In learning to speak, he must choose only those sounds which are distinctive in his speech community. Although there is no genuine agreement about which specific vowels, for example, the child will choose to produce first, based upon his perception we believe he will select first "those vowels which are maximally different." Secondary vowel features, such as nasalization, may be added to any vowel, but we would expect this feature more regularly in a language employing nasal vowels, as e.g. French, Portugese, etc.

It becomes the task of the generative phonetician, then, to relate phonological and phonetic representations by means of phonological rules to indicate what may logically be predicted and what is unique in the sound system of a language. The vehicle for interpreting these rules is distinctive feature analysis.
2.4.6.7. As mentioned above, distinctive feature analysis has been associated with linguistic research at M.I.T. since the 1950's. Jakobson, with Fant and Morris Halle published *Preliminaries to Speech Analysis* in 1952 in which the basic theory of distinctive feature analysis was expounded; Halle based a later article on *Preliminaries: the Strategy of Phonemics*; Georg Heike of the Institut für Phonetik und Kommunikationsforschung applied the theory to German, but he based his 1961 article on *Fundamentals of Language* which Jakobson and Halle had published in 1956.

The distinctive features of Jakobson, *et al.*, now termed the Jakobsonian Distinctive Feature is always binary, (Heike noted one exception for German *kompakt/diffus*, but he is following an earlier lead of Halle here.) Postal's distinctive feature (1968) is part of his system for describing ideal pronunciation and is not necessarily binary. For Chomsky and Halle's *Sound Pattern of English* (also 1968), the distinctive feature takes on a note of universality and is considered one of a set of inherent properties which represent man's phonetic capabilities.

The analysis proceeds in matrix fashion by subjecting distinct segments to the entire list of distinctive features. Some of the features will be redundant since
they will not apply to all segments. E.g. the features VOICED and CONTINUANT are redundant for vowels since all vowels are voiced continuants; the feature TENSE is proper to vowels, and hence redundant for consonants.

Depending on the language under analysis, other features will prove to be redundant for the specific analysis. Again, using English for our example, all voiceless stops are aspirated when initial but no voiceless stops are aspirated in clusters with 's'. Therefore, the feature FORTIS may be considered redundant for voiceless stops in English. Such considerations contribute significantly to the principle of economy. Since rigorous phonemic notation does, in fact, demand a separate symbol for each contrast, the system of distinctive feature analysis does allow for greater economy as well as greater precision.

An interesting aside here is that as German teachers we are still left with the question: Should a norm of pronunciation such as the Siebs be demanded or should we use the criterion of individual native speakers? Certainly the realization of distinctive sounds cannot be limited to a single classroom model since there is no single speaker who will always produce the same realization for a distinctive sound.
2.4.6.8. A phonological rule must state the exact circumstances under which a phonological process will take place. An example of such a rule in English might be the following: A voiceless stop consonant is aspirated when it is followed immediately by a stressed vowel unless that consonant is immediately preceded by 's'. This rule sets up our redundancy pattern mentioned above in our discussion of the matrix. The rule specifies that aspiration for stops in English is predictable within set environments. Whatever strings are generated by the grammar within the specified conditions, must conform to this rule.

2.4.6.9. It becomes the task of the phonological component in the generative grammar to apply phonological rules to syntactic strings of lexical and grammatical morphemes (e.g. plural, past, 3rd singular, etc.) to generate the phonetic representation of the sentence or, in other words, present the sentence in pronounceable form.

To perform this function, four items are required:

1. The unique sound properties of the morphemes. These are represented in the lexicon — hence the term 'lexical representation'.
2. The syntactic organization of morphemes in surface structure.

3. Those redundancy rules which specify the predictable sound properties of the individual morphemes.

4. Those phonological rules which specify sound properties (stress, for example) of parts of the sentence (noun phrases, verb phrases, etc.) and ultimately of the whole sentence.  

The phonological rules, as *generative*, have the same operations as other T.G. rules: they may delete, add, permute, or substitute elements. Setting up the specific environments for English electric/electricity (k to g) would present a simple example of this.

Application of this process, although far from simple, could be attempted in the F.L. teaching situation, specifically as to the realization of specific sounds and sound sequences in determined environments as, e.g. German ch, French g, Latin q, etc. Whether this system would prove immanently better than the system of phonologically conditioned allophones, must be seen in the broader context of system rather than be limited to the specific observation. For the present I believe we can safely note that there must be considerable simplification before generative phonology will have broad acceptance as a teaching tool in the environment of the F.L. classroom.
...the dissatisfaction with a taxonomic phonemic representation might be compared to dissatisfaction with labels from the periodic chart of elements after the discovery of isotopes. $\text{H}_2\text{O}$ is not composed solely of atoms of hydrogen and oxygen with a molecular weight of 1 and 16, as older forms of the periodic chart may indicate. Even so, the labels on the periodic chart are not without their uses. In somewhat the same way autonomous phonemic representations are useful, as in the teaching of languages. Ultimately, however, a generative phonological analysis may represent language more precisely. Often in actual experience there are relatively few differences between autonomous phonemic representations for many entities of a language and representations by means of systematic phonemes, though the theoretical bases for each are quite different. 45.

Further reference to aspects of generative phonology, relating to language teaching, will be made in the practical application of the theory to classroom use, which we shall attempt in Chapter IV.

2.4.7. LANGUAGE UNIVERSALS. It is an obvious fact of life that the languages men speak are different. Diachronic linguistic studies have traced different languages and dialects by means of written records. Through reconstruction and the comparative method we even speculate how many of these languages and dialects actually sounded. Reasons for language change are not as obvious as change itself. Some of the causes of change that have been suggested are actually fantastic. Yet, while we need no evidence to
demonstrate that languages differ, we are interested in discovering what features, if any, are common to all languages. These features are language universals and language universals are very much the concern of T.G. grammarians with their insistence on a rationalist approach to language acquisition.

Following Humboldt, Chomsky believes that the acquisition of language is a process of maturation of an innate language capacity. All languages in their deeper structure, their inner form, will be found similar to each other.

2.4.7.1. From studies made on developing children, we recognize that some sounds and some structures are repeatedly mastered first. E.g. a stop sound with a vowel are common first sounds; regular patterns tend to appear before less regular, as dental suffix weak past before ablaut forms in English verbs. The presumption here, and it is obviously still a presumption, is that in a grammar composed of rules, base rules are mastered first; low level rules later. It is in the area of base rules that the validity of language universals will be decided.
A theory of linguistic structure that aims for explanatory adequacy incorporates an account of linguistic universals, and it attributes tacit knowledge of these universals to the child. It proposes, then, that the child approaches the data with the presumption that they are drawn from a language of a certain antecedently well-defined type, his problem being to determine which of the (humanly) possible languages is that of the community in which he is placed.

... For the present we cannot come at all close to making a hypothesis about innate schemata that is rich, detailed, and specific enough to account for the fact of language acquisition. Consequently the main task of linguistic theory must be to develop an account of linguistic universals that, on the one hand, will not be falsified by the actual diversity of languages and, on the other, will be sufficiently rich and explicit to account for the rapidity of uniformity of language learning, and the remarkable complexity and range of the generative grammars that are the product of language learning.

The study of linguistic universals is the study of the properties of any generative grammar for a natural language. Particular assumptions about linguistic universals may pertain either to the syntactic, semantic, or phonological component, or interrelations among the three components. 48.

2.4.7.2. The theory of generative phonology contains the best potential for linguistic universals in the phonological component. However, outside of the generative considerations, we recognize that each language has a finite number of meaningful speech sounds, These sounds differ from language to language (as they do — within limits — from speaker to speaker), yet each language
maintains a relatively constant number of meaningful oppositions. Nevertheless, while the sounds do differ from language to language, many common elements are shared. The basic division of language sounds into consonantal and vocalic, while quite general, is still a shared basic. Sound systems tend to line up into orders and series, with a stop series, a friction series, etc. as common members. While it is no demonstration to point out these facts, still, enough similarities in nature tend to indicate unity.

2.4.7.3. On the syntactic level, we note that different languages do line up elements in different arrangements: verb in first position, verb in last position, verb in second position, subject preceding or following verb, object preceding or following verb, adjective or phrase modifier preceding or following nominal modified, etc. Given the validity of deep structure, however, it does not seem unreasonable to conjecture that these surface differences are due to the operation of low level rules and that the base structure has many areas of sameness.

2.4.7.4. The semantic component, while the most difficult to develop in terms of universals, may also yield material relevant to this study. For example, Chomsky asks us to
consider proper names as they "must designate objects meeting a condition of spatiotemporal contiguity," or colour words "must subdivide the colour spectrum into contiguous segments;" or that "artifacts are defined in terms of certain human goals, needs, and functions instead of solely in terms of physical qualities." 49.

Granted the connections seem somewhat tenuous, we must remember the tendency of realized language to change and the many factors which actually do stimulate change in surface manifestations of human speech. Such observations do not prove the existence of language universals, but they do cause us to appreciate the practical problems involved in determining the presence of features which are truly universal.

Certainly the language teacher may capitalize on whatever aspects of common or shared features are present between the native language of the student and the target language. This has been regularly done in contrastive studies, such as those which were published by the University of Chicago for the languages most commonly taught in the United States. Whatever steps generative grammarians do take in establishing true language universals will be closely followed by language teachers.
2.4.8. **T.G. Grammar and F.L. Teaching.** As noted, it is not valid to list specifics as accomplished facts in the sense that T.G. grammar has had extensive use in F.L. method and/or materials up to the present. This grammar is beginning to have a measurable impact on the teaching of English; the impact is growing. The application of T.G. principles to other modern languages is also growing. Therefore, we feel justified in listing the following as contributions of T.G. grammar to F.L. teaching.

1. T.G. grammar has revived the rationalist-empiricist controversy in the theory of learning. This controversy, in turn, has brought structuralist methodology in F.L. teaching into the light of constructive criticism since structuralist method is behavioristic.

2. T.G. grammar has introduced greater economy into the statement of grammatical rules.

3. Teachers have been reminded of the distance which exists between theory and practice, specifically psychological and linguistic theory as applied to practice in the F.L. classroom.

4. T.G. grammar has introduced a new dimension into the potential computers and programmed learning hold out to F.L. teaching.

5. T.G. has suggested a review of older methodology, specifically that based on rationalist theory.

6. F.L. students approaching their study from the T.G. viewpoint have a unified concept of the language which we feel is essential for bringing language elements together for practical use.
6. With the gradual dissemination of T.G. theory through secondary school English courses, the application of this theory to F.L. teaching will be more readily implemented.
2.5.0. **STRATIFICATIONAL GRAMMAR.** Completely outside the American linguistic tradition of Bloomfield and American Structuralism we find an American grammarian, Yale professor Sydney M. Lamb, and his grammatical description which he terms Stratificational Grammar. In a sense, we may call Stratificational Grammar a "grammar for grammarians" since, in the tradition of Louis Hjelmslev, it emphasizes system over expression.

2.5.1. The main work we have in this area is Lamb's own Georgetown University monograph, *Outline of Stratificational Grammar*, which appeared in 1966. The same year, Lamb published two articles on his grammar, one in *Language* (536-573); the other in *Romance Philology* (531-573). Henry A. Gleason, who has been doing extensive work in this grammar at the University of Toronto, presented a paper at the 1964 Georgetown R.T.M. on linguistics and language studies ("The organization of language: a stratificational view") which is a clearer introduction than Lamb's monograph. Peter A. Reich is working with Lamb at Yale, mainly with computer research on the grammatical system. M.A.K. Halliday is researching a similar grammar, which he calls Systematic Grammar, at the University of London. Outside of this elite circle, little work is being done in Stratificational grammar. However, it must be noted,
since the grammar has attracted attention and because the current work in Stratificational grammar is closely aligned to computer work in language — computers now definitely finding their way into the domain of the F.L. teacher — we are including this brief note on Lamb's work.

2.5.2. Hjelmslev called his work "Glossematics" — a composite term from two Greek stems meaning a "study of tongues." It was Hjelmslev's purpose to introduce a system of grammar as powerful as a system of mathematics.

Hjelmslev sets up five features he considers fundamental to the concept of language:

1. A language consists of a content and an expression.
2. A language consists of a succession, or a text, and a system.
3. Content and expression are bound up with each other through commutation.
4. There are certain definite relations within the succession and within the system.
5. There is no one-to-one correspondence between content and expression, but the signs are decomposable into minor components. Such sign-components are, e.g. the phonemes, which I should prefer to call taxemes of expression, and which in themselves have no content, but which can build up units provided with a content, e.g. words. 50.
Hjelmslev saw grammar as a calculus of a language:

(the linguist) has — arbitrarily but appropriately — himself decreed to which objects his theory can and cannot be applied. He then sets up, for all objects of the nature premised in the definition, a general calculus, in which all conceivable cases are foreseen. This calculus, which is deduced from the established definition independently of all experience, provides the tools for describing or comprehending a given text and the language on which it is constructed. 51.

2.5.3. We can see how well Lamb adheres to the Prolegomena of Hjelmslev from the Outline. Here I will abstract freely from Lamb's linguistic analysis. (Outline, p. 3.)

A language may be regarded as a system of relationships... The linguist can only observe the manifestations of linguistic structure, i.e. samples of speech and/or writing, and the situations in which they occur. From analyzing such data he must try to construct a representation of the system of relationships which underlie the linguistic data. ... Except for the various refinements which are necessary, there is little more to linguistic analysis, reduced to its essentials, than making observations similar to those of the student in ninth grade algebra to the effect that, e.g.

\[ abc + abd + abe + abf + abg \]

may be reduced to

\[ ab( c + d + e + f + g ) \]. ...

(This) is not essentially different from what the linguist does when he determines that
blueberry, cranberry

can be reduced to

blueberry
cranberry

2.5.4. Lamb sees language as an integrated whole. (pg. 6.) This is a point he shares with the T.G. people but not the structuralists. He denies the necessity of proceeding in an orderly step-by-step manner in analyzing language from phonology through lexicon. With this statement, Lamb repudiates the structural techniques of the 1950's as too mechanical; the transformationalists as too rule bound. In Lamb's system, the linguist is allowed to "jump around" from subsystem to subsystem; use "intuition, hunches, and trial-and-error techniques." (pg. 7.)

2.5.5. Lamb makes no apology for his peculiar type of notation. He realizes that languages are complicated systems, and notational devices, such as he has devised, are of absolute necessity. He sees his diagrams as representative of the brain function. In this there would seem to be a hint of deep structure. Lamb's manner of fixing the nodes in his tree diagrams indicates the function in two dimensions: blocked impulses (similar to constraints) are also indicated. The branches of the tree
move upward toward meaning, downward toward expression. If branching lines converge and touch, they are unordered; if they do not touch, they operate from left to right. Elementary relationships occur in a small number of recurrent types of patterns: sign pattern, tactic pattern, alternation pattern, knot pattern (pg. 12). In setting up phonemic patterns, Lamb's system is not unlike feature analysis with his unique branching apparatus indicating the applicable features. The features here he terms hypophonemes.

The subsystems are grouped under the systems of phonology, grammar, and semology. These subsystems are seen as strata (hence Stratificational). There are six stratal systems: hypophonemic (the lowest or basic), phonemic, morphemic, lexemic, sememic, and hypersememic. (pg. 18). Each system has a sign pattern (with the exception of the hypophonemic system which does not have a sign pattern and it is not yet clear in Lamb's system how this stratum is manifested.), a knot pattern, a tactic pattern, and an alternation pattern. The alternation pattern, knot pattern, and sign pattern of each system form the realizational portion of that system. The tactic pattern for each system is given the term tactics; thus, phonotactics, morphotactics, etc. (pg. 19). In the notation
a triangle-like figure indicates 'and'; a branch-like figure indicates 'or'. As noted above, the figures are two dimensional: upward and downward and they show the ordering/non-ordering of the rules.

A diagram of the portmanteau realization of German *an* for 'an dem' would then be set up in the following way.
In this figure we note that the downward ORS (branch points down) are ordered (lines to NOT touch), and hence must be read from left to right.

2.5.6. Quite obviously the linguist, not to mention the F.L. teacher or student, attempting to utilize this type of notation in Stratificational grammar, would need extensive practice in reading the tree diagrams. As such, then, we might easily dismiss this grammar from our list of contributors or potential contributors of linguistic theory to F.L. teaching practice. While this writer admits the difficulties inherent, and, as indicated, these same difficulties are anticipated by Lamb himself, we would be ill advised to dismiss Stratificational grammar a priori.

2.5.7. In an article on Lamb's contribution, John White offers some comments which are apropos to a consideration of potential contribution.

Besides its predictive capability, stratificational theory offers a hypothesis of what happens in the brain.... In stratificational theory, the decisions are all made before any linguistic forms are produced with those forms being actualized only at the lower end of the network. Lamb maintains this is simpler and
more economical description than transformational theory's rewrite rules, which suggest that one linguistic form is changed into another. ... stratificational grammar is a new theory of language which may turn out to be the most precise, economical and complete of all existing models. 52.


4. Ibid, p. 34.


8. Ibid. p. 75.

9. Ibid., p. 77.


12. Ibid., p. 213.


19. Ibid., p. 3.

20. Ibid.


27. The attitudes here alluded to may be contrasted with those expressed by Charles Hockett in *The State of the Question*. Gravenhage: Mouton, 1970, especially in reference to Chomsky-Halle and S.P.E.


51. Ibid., p. 10.

3.0 The current controversy between behaviorist and rationalist psychology in linguistic circles must not be seen as a philosophical innovation in the world of ideas. The argument is easily traced back to the 17th century and beyond to the Scholastics and even back to the cradle of Western thought in Greece, with Aristotle's insistence on the categories and the priority of sense knowledge; Plato's world of forms and his innate ideas.

The collapse of the Roman Empire plunged Europe into intellectual as well as economic and political chaos. Feudalism became the substitute form of government which would last until Karl der Grosse reestablished the "Empire". Learning and letters stayed with the clergy, in the Church and monastery. Through the writings of Augustine of Hippo and the 12th century work of Arabian philosophers, Averroes in particular, Plato and Aristotle became known to the Schoolmen of the 13th and 14th centuries. So again we find a split in the theory of knowledge: the Dominican School of Thomas Aquinas with Aristotle and the priority of the senses, the Franciscan School with Bonaventure following Plato and his doctrine of innate ideas.
3.0.1. The matter of innate ideas as opposed to a theory which demanded prior sense knowledge - *nihil est in intellectu quod non prius fuerit in sensu* - reached a new dimension with the scientific method of Francis Bacon (d. 1626) and the phenomenology of Thomas Hobbes (d. 1679). Locke's general principle as expounded in *An Essay Concerning Human Understanding* (1690) is that all our ideas are grounded in experience and depend on it. Berkeley, in his *A Treatise concerning the Principles of Human Knowledge* (1710) carried empiricism further than Locke had done since Berkeley rejected Locke's idea of material substance and incorporated empiricist ideas into his idealism. David Hume took up the empiricist tradition and brought it to a type of completion in his *Treatise on Human Nature* (1793). Hume developed an actual philosophy of empiricism and it is to him that modern day empiricists look as the "Father" of empiricism.

3.0.2. The philosopher the British Empiricists were in the main writing against was René Descartes (1596-1650). Descartes believed in innate ideas as proper objects of the human mind. For Descartes, the human being is born with certain dispositions or propensities which constitute the mind to conceiving reality in certain specific ways. From Descartes we get the notion that all clear ideas
are in some way innate, as, e.g. the idea of God. Not that these ideas are born full blown in a baby's mind but that the mind produces them on the occasion of experience. Experience is only the occasion of the idea, not the cause as empiricists insist. There can be no causality for these ideas outside the system. They are implanted in the mind by God. From this principle it is readily seen how empiricism could accept no part of Descartes' doctrine and why his name ranked very low in the estimation of modern philosophers who were in strong opposition to the "theologizing" of the middle ages.

Innate ideas for Leibniz (1646-1716) are derived for the mind from itself; the mind does not start with a supply of such concepts. For Leibniz, experience is necessary for the mind to come to the knowledge of the truths which are deriveable from itself; but there are truths of instinct by which the mind naturally arrives at conclusions through natural logic. This is not to say that Leibniz taught that the mind simply has the power to assent to truth when presented. Even empiricists would probably agree to this. For Leibniz, the ideas come from the mind itself, reflecting on itself. Leibniz rejects the _tabula rasa_ of Locke (and of Aquinas before him) and
states that the ideas are innate as propensities or natural dispositions. The mind can arrive at the truth of a proposition from within.

In the closing years of the 18th century, Kant (1724-1804) attempted a synthesis of empiricism and rationalism. He was, by his own admission, attracted to the doctrines of Hume, although Kant considered Hume's pure empiricism insufficient and sought to combine this theory to continental rationalism and produce a new system. In his metaphysic, then, Kant relegated all supersensuous knowledge to the realm of faith. Science is the only way in which we may extend our knowledge but scientific facts are not the only reality. What Kant actually accomplished by his attempt at a blend of metaphysics and empiricism was to draw the battle lines more clearly for the 20th century. 20th century empiricists formulate their theory of knowledge not according to the genesis of concepts but as a total response to experience alone.

3.1.0. While we must always respect the caveat about labels, we are specifically impelled to do so here. In a time when it is even difficult to ascertain what "right" or "left" might constitute with the confusion over what is the "center", the terms "rationalist" and "empiricist" (or "behaviorist-empiricist") do not necessarily mean the
same thing to everyone who uses the terms. It will be more profitable for us to pin-point the theory of knowledge today as applicable to this paper with the names of the scholars who hold and write the theories.

3.1.1. What we are treating here is much more than vain speculation. As we indicated earlier, the attempt of the Neogrammarians to place linguistics on the level of a *science* and the constant cry of Structuralists that linguistic method be *scientific* meant that the method of the natural sciences current would naturally find its way into linguistic research. Whether this method, as proposing a theory of knowledge, can be applied to the teaching of foreign languages effectively is a matter of concern not only to T.G. theory but also to applied linguistics in the F.I. classroom.

For example, the pedagogical conclusions of Harvard's B.F. Skinner and his behavioristic-empiricist theory is that the teaching machine should replace the teacher in the classroom, because the machine will produce the desired educational results in half the time needed by the human teacher.
A company that spends 25 million dollars per year on the instruction of its employees can save 12½ million dollars a year by cutting teaching time in half. Anyone who can save his company 12½ million dollars a year is going to do so. Most of the people now working in the field of auto-instructional methods are being supported by industry. There is no one in a comparable position in education — no one whose job it is to look for more efficient ways of teaching, no one with the authority to say, "Look, we can teach algebra twice as quickly with these machines; let's do it." I'm not sure anyone is even looking for more efficient methods. Administrators are concerned with hiring and firing, with housing, and so on, and teachers are concerned with giving assignments.

Our reaction here should not be that of enraged humanists or (considering the current crisis in academic job openings), insecure pedagogues. Our honest reaction must be a question: does this method hold the total answer to many of our learning problems, as Skinner suggests, and are we merely continuing an antiquated system for selfish reasons?

There is no one within the educational system who is in such a position (to make decisions), and unfortunately, those who are on the outside advocating changes are not aware of the possibilities. When we eventually look back on educational reform in the 1960's, we will see that those who have spoken out most vigorously have completely neglected method.
3.1.2. It is not within the competence of this writer nor the scope of this thesis to develop the history and/or problems of American educational psychology. However, insofar as the theory of knowledge and its practical ramifications do affect F.L. methodology, it must fall within our area of interest and inside the pale of applied linguistic studies.

Our practice flows from our theory. Structuralist practice is based on behaviorist-empiricist theory. T.G. practice, as we can speak of T.G. teaching practice, is based on rationalist theory. What is the answer?

3.2.0. It would seem that Bloomfield included behaviorism in his *Language* in an effort at keeping linguistics "scientific" in the meaning current in the late 1920's and early 1930's. J.B. Watson's *The Battle of Behaviorism* was a work familiar to Bloomfield and a work which clearly stipulates that behavior is a matter of stimulus-response, much in imitation of the famous experiments of Pavlov with dogs. Thinking is just one type of behavior. According to Watson, "Thinking is merely talking, but talking with concealed musculature." (Watson, p. 33).
Bloomfield uses the stimulus-response and his famous Jack and Jill examples in *Language* to show that the behaviorist or mechanist approach to the theory of knowledge is superior to any mentalist approach; in fact, the mechanist position is the only position tenable for a true scientist. "The only useful generalizations about language are inductive generalizations." Further on he notes that the mechanist theory

...supposes that the variability of human conduct, including speech, is due only to the fact that the human body is a very complex system. Human actions, according to the materialistic view, are part of the cause-and-effect sequences exactly like those we observe, say, in the study of physics or chemistry. 4.

Bloomfield's error (since I see this extreme view as an error and will take pains in this chapter to demonstrate Bloomfield's position as erroneous), may at least be laid at the door of oversimplification. While it was not problematic to reduce behaviorism in 1933 to a relatively simple set of postulates, there was much difficulty in reducing most of the philosophical tradition of the western world to a single label and a handful of axioms. It is obviously no more valid to let the metaphysics of Descartes (which is really the mentalist position described in *Language*, pp.32-33), stand for the
total metaphysics of Western Philosophy, than to allow Aquinas to be the only spokesman for all of Scholastic Philosophy. As indicated earlier, the surface problem is in labeling; the philosophical problem is in failing to make absolutely necessary distinctions.

3.2.1. Although Bloomfield never intended to found a "school" of linguistics, he nevertheless had great influence on linguistics both in America and in Europe. Prior to World War II, Bloomfield's name was synonymous with American linguistics. In a word, Bloomfield gave the direction that American Structuralism would follow.

Perhaps more than any other, he was influential in inculcating a scientific attitude toward linguistic work in America,... Through the example of his book and the many articles he contributed to linguistic journals, and especially through his "Set of Postulates" for a scientific examination of language, Bloomfield's prestige was enough to disavow "mentalism" and espouse the cause of scientific linguistics,... 5.

3.2.2. To avoid any post hoc conclusions, we shall not join the attitudes of specific members of the Structuralist school directly to whose of Bloomfield. However, as we have indicated, since the attitude of this great scholar have been communicated through his writings, and since many currently writing linguists (e.g. Hockett, Twaddell, Moulton, etc.) were also his colleagues, we should expect
shared theories.

3.3.2.1. In *A Course in Modern Linguistics*, Charles Hockett sets up a situation between two men at a lunch counter which is very similar to Bloomfield's Jack and Jill example (pp. 140-141). Hockett concludes the section

...the meanings which utterances and morphemes come to have... are the result of recurrent regularities of correspondence between acts of speech of various grammatical structures and the behavioral antecedents and consequences in which (one) participates. 6.

An even more explicit statement of the linguistic theory of knowledge which Hockett employs comes from his "A System of Descriptive Phonology,"

All the behavior of a human organism is biophysical; it is subject to physical and biological analysis. Certain acts are, in addition, biosocial. A biosocial act is one which (1) is determined ultimately by the life-history of the individual in a given social group, (2) functions directly or indirectly as a stimulus for the behavior of others and of the actor himself, and (3) does this in a manner similarly determined by the life-histories of the individual involved. 7.

3.3.2.2. Robert Lado provides another example of this identity of Structuralism and Behaviorism and is an
especially good source in this context since he has had a long association with language teaching and the education of F.L. teachers here and abroad.

When a person speaks, we assume that the following takes place: through some motivation the person decided to speak, and some content is brought under attention. Through association of this content with expression in the language, sentences are constructed with words, intonation, phonemes, etc. ...

Each one of these factors — memory, facility, fluency, units and patterns, etc. — can be described and sometimes measured separately, ... 8.

In dealing with the theory of knowledge more precisely, Lado is careful about committing himself to a definite position, but we can glean the following:

Although the experiments (Pavlov's) were performed on dogs, it is assumed that the process applies to man as well. And the principle of conditioning is generally taken to apply to learning beyond that of reflexes. Nevertheless, a theory of learning cannot be built on conditioning alone. Only some parts of language learning might be explained by conditioning, e.g. the arbitrary connection between a word and its meaning. ...
The empirical laws of learning apply to a limited part of the process of language learning, and their relevance will have to be demonstrated with language materials under language-learning conditions. Since the laws are stated in general terms, their interpretation for language learning can lead to ambiguities and contradictions. The following are some of the more generally mentioned laws of learning.

The fundamental law of contiguity. When two experiences have occurred together the return of one will recall or reinstate the other.

Law of Exercise. Other things being equal, the more frequently a response is practiced, the better it is learned and the longer it is remembered. Contrariwise, when a response is not practiced, it tends to be forgotten.

Law of Intensity. Other things being equal, the more intensely a response is practiced, the better it is learned and the longer it will be remembered.

Law of assimilation. Each new stimulating condition tends to elicit the response which has been connected with similar stimulating conditions in the past.

Law of effect. Other things being equal, when a response is accompanied or followed by a satisfying state of affairs, that response is reinforced. When a response is accompanied or followed by an annoying state of affairs, it is avoided.

3.3.2.3. We shall use Nelson Brooks for our third example since he also has had a direct impact on the teaching of F.L. and the training of F.L. teachers.
In *Language and Learning*, Brooks sets up an almost classic description of behaviorist theory.

(Language learning) involves the establishment of a set of habits that are both neural and muscular, and must be so well learned that they function automatically. ... In the case of the infant, there is a fascinating contest between the newborn potential for the use of parole and the community's highly systematized practice of language. Of course the latter always wins and imposes its will upon the loser almost completely. This outcome has long obscured the arresting significance of what the infant brings to this struggle. For within the newborn baby there is a vital force that finds delight in incessant verbal play, with the result that within a matter of months, he "breaks the code" of the language being used about him, and within a few years he has completely mastered it in its spoken form. 10.

In introducing the last quote, I used the words "almost classical" because we see here in Brooks an attempt to bridge the gap between behaviorist and rationalist theory in explaining language acquisition. Brooks speaks, we note, of the "newborn potential for the use of parole" and "what the baby brings to the struggle...a vital force that finds delight in incessant verbal play,..."

Brooks continues in later chapters of *Language and Language Learning* to explain something of the stand of both philosophical positions as he views them:
...the behaviorists have rejected as irrelevant all responses that cannot be observed and recorded. They have assumed that the typist brings no more to an experiment than does the typewriter, the only difference being that the typist's machinery is more complicated. In contrast, the so called Gestalt psychology proposes that the individual does contribute to perception (and, by extension, to learning) certain raw materials that interact with the phenomena received by the senses and that together these produce the forms, patterns, and wholes with which we feel ourselves to be surrounded. 11.

But, lest we think that this explanation of the schools of behaviorist and Gestalt psychology brings Brooks to the position of the T.G. school, we turn the page and read, "Language is a highly complicated activity, and it is wholly learned." 12.

3.3.2.4. Karl Conrad Diller, in his Harvard PhD dissertation (1967) and the published edition of the same material which appeared as Generative Grammar, Structural Linguistics, and Language Teaching (1971), approaches this same general area of discussion from a slightly different point of view. However, Diller paints the picture in strong strokes of black and white, including Brooks in the same theoretical camp with Bloomfield, Hockett, Moulton, and Twaddell. In
the light of the above paragraphs from Brooks' own work, Diller's inclusion does not seem justified. His further comments, however, will supplement much of what we have tried to say here.

3.3.3. The current controversy between behaviorist and rationalist psychology, as it applies to linguistics and language learning, is actually the controversy between B.F. Skinner and Noam Chomsky, if we may have these scholars serve as champions for their individual camps.

3.3.3.1. Skinner's position is a good point of departure since it is an extreme position.

Everyone seems to feel that somewhere in the brain there should be a copy of nature, and the perception people seem to feel that they are exploring the ways in which that copy differs from reality. But I insist that there is no copy there at all; that as soon as the organism begins to respond to the environment, it is responding, and not duplicating, and that in seeing a triangle, for instance, there need be nothing in the organism which is triangular in any sense whatsoever.... 13.

As I see it, psychology is concerned with establishing relations between the behavior of an organism and the forces acting upon it. 14.
... we see that the humanist and the behaviorist have different conceptions of man and the nature of man. But if it is the goal which matters, rather than the conception, then I feel that the weight of evidence is all on our side. For example, in education, we can specify materials and methods which bring about the changes in the student we want to bring about — and in a very effective way, much more effective than the person who thinks of the student simply as an individual whose wishes must be respected, who must make decisions, and so on. 15.

3.3.3.2. Then, addressing himself specifically to behaviorism and language in his *Verbal Behavior*, Skinner continues

We observe that a speaker possesses a verbal repertoire in the sense that responses of various forms appear in his behavior from time to time in relation to identifiable conditions. A repertoire, as a collection of verbal operants, describes the potential behavior of a speaker. To ask where a verbal operant is when a response is not in the course of being emitted is like asking where one's knee-jerk is when the physician is not tapping the patellar tendon. 16

Any operant, verbal or otherwise, acquires strength and continues to be maintained in strength when responses are frequently followed by the event called "reinforcement." The process of "operant conditioning" is most conspicuous when verbal behavior is first acquired. The parent sets up the repertoire of responses in the child by reinforcing many instances of a response.

... Operant reinforcement, then, is simply a way of controlling the probability of occurrence of a certain class or verbal responses. If we wish to make a response of given form highly probable, we arrange for the effective reinforcement of many instances. 17.
3.3.3.4. The question of operant conditioning in verbal behavior does not explain child speech well enough, it would seem, even for Skinner, for he goes on to discuss the early responses of little children in terms which definitely weaken the previous statement.

A child acquires verbal behavior when relatively unpatterned vocalizations, selectively reinforced, gradually assume forms which produce appropriate consequences in a given verbal community. In formulating this response we do not need to mention stimuli occurring prior to the behavior to be reinforced. It is difficult, if not impossible, to discover stimuli which evoke specific vocal responses in the young child. There is no stimulus which makes a child say b or a or e, as one may make him salivate by placing a lemon drop in his mouth or make his pupils contract by shining a light into his eyes. The raw responses from which verbal behavior is constructed are not "elicited." In order to reinforce a given response we simply wait until it occurs. 18.

3.3.3.4. In setting up the concept of the mand (cf. command, demand, countermand, etc.) Skinner tries to show the stimulus-response of verbal behavior between the individual and the community. (Chapter 3, Part II). He then sets up three types of verbal behavior: echoic behavior, textual behavior, and intraverbal behavior. Echoic behavior is the verbal response to a stimulus by repeating the sound pattern. Skinner sees this as applicable to the early verbal behavior of the child. Textual behavior introduces reading or reading-type
situations which resemble echoic stimuli as a product of earlier verbal behavior, but the stimulus here is in some sense different since the response is not in the same modality. In other words, visual stimuli (printed words) set up auditory responses instead of stimulus and response being in the same modality. The reinforcement here is usually for educational reasons. Copying printed matter is similar to echoic behavior in that the formal correspondence between stimulus and response exists.

In intraverbal behavior, however, there is no point-to-point correspondence. Where intraverbal behavior is trivial ("Thank you." "You're welcome.") the association is simple enough. But when the elicited response seems creative, Skinner resorts to word association and verbal repertoire.

The intraverbal relations in any adult repertoire are the result of hundreds of thousands of reinforcements under a great variety of inconsistent and often conflicting contingencies. Many different responses are brought under control of a given stimulus word, and many different stimulus words are placed in control of a single response. ...

It was once thought that the types of association in intraverbal responses represented types of thought processes. ... We may assume, on the contrary, that, aside from intraverbal sequences specifically acquired, a verbal stimulus will be an occasion for the reinforcement of a verbal response of different form when, for any reason, the two forms frequently occur together. 19.
3.3.5. Echoic behavior affects second language learning, according to Skinner, since the development of a large echoic repertoire in the native language makes the echoing of verbal stimuli of a different language very difficult. Usually attempts come closer to an item in the echoic repertoire.

(I find the above point difficult to accept not only because the application of Occam's razor is in order, but also because children who already have a large echoic repertoire regularly experience less fossilization than adult second language learners.)

3.3.4. The pattern of difference between behaviorism and rationalism will become clearer with a list of contrasting statements from the writings of Chomsky.

A good deal of foreign language instruction ... is based on the assumption that language really is a habit structure, that language is a system of skills and ought to be taught by a drill and by the formation of stimulus-response associations. I think the evidence is very convincing that that view of language structure is entirely erroneous and that is a very bad way — certainly an unprincipled way — to teach a language. If it happens to work, it would be an accident,... Our understanding of the nature of language seems to show quite convincingly, that language is not a habit structure, but that it has a kind of creative property and is based on abstract formal
principles and operations of a complex kind....
All we can suggest is that the teaching programme
be designed in such a way as to give free play
to those creative principles that humans bring
to the process of language learning....I think
we should probably try to create a rich linguistic
environment for the intuitive heuristics that the
normal human automatically possesses. 20.

3.3.4.1. In response to Verbal Behavior, Chomsky wrote
a review and used this platform to expound more on his
theory.

The child who learns a language has in some
sense constructed for himself on the basis of
his observation of sentences and nonsentences
(i.e. corrections by the verbal community).
Study of the actual observed ability of a
speaker to distinguish sentences from non-
sentences, detect ambiguities, etc., appar-
ently forces us to the conclusion that this
grammar is of an extremely complex and abstract
character, and that the young child has suc-
cceeded in carrying out what from the formal
point of view at least, seems to be a remark-
able type of theory construction. Furthermore,
this task is accomplished in an astonishingly
short time, to a large extent independently of
intelligence, and in a comparable way by all
children. Any theory of learning must cope with
these facts.

It is not easy to accept the view that a
child is capable of constructing an extremely
complex mechanism for generating a set of
sentences, some of which he has heard, or that
an adult can instantaneously determine whether
(and if so, how) a particular item is generated
by this mechanism, which has many of the proper-
ties of an abstract deductive theory. ...
important traditional distinctions, a refusal to study the contribution of the child to language learning permits only a superficial account of language acquisition, with a vast and unanalyzed contribution attributed to a step called "generalization" which in fact includes just about everything of interest in this process. If the study of language is limited in these ways, it seems inevitable that major aspects of verbal behavior will remain a mystery. 21.

3.3.4.2. Nor should we feel, with Twaddell, that Chomsky is merely creating straw men with the label of behaviorist among the teachers of F.L. Wilga Rivers lists extensively in The Psychologist and the Foreign Language Teacher (1964) quotations to demonstrate very convincingly that many descriptive linguists are very close to Skinner's position. This point is vital for an appreciation of Chomsky's position since he is repeatedly brought to task (as by Twaddell -mentioned above - W.V. Quine, Gilbert Harman, etc.) for overstating 1) the position of behaviorists and 2) the number of individuals who actually embrace this theory and apply it to method.

3.3.4.3. This is not to say that Chomsky is not vulnerable to attack, specifically in his philosophical statements. A priori, one cannot wonder but that Chomsky, the linguist, may be somewhat out of his field when he becomes Chomsky, the metaphysician. Rulon Wells points out, for example,
that in setting up his postulate for innate ideas, Chomsky has in fact set up an argument with a black-white fallacy. Chomsky leaves us no alternatives: either rationalism or empiricism. Alternatives might be considered among different interpretations of innateness (Locke, Descartes, Humboldt, etc.) especially in the light that Descartes seems to teach that the senses never cause but only occasion ideas. Wells asks, quite properly, whether such a stand could be accepted in scientific circles today. Again, the question is reduced to making necessary distinctions and a careful reading of many Chomskyan statements at least leads the reader to wonder.

3.3.4.4. To develop this area further would go beyond the scope of this paper. We have alluded to some problems in the philosophical fundamentum of the arguments. In understanding these problems we must keep in mind the following: 1) The long-standing controversy between the empiricist and rationalist schools with the concomitant variations in definition over periods of time. 2) The differences in approach between the deductive method of philosophy and the inductive method of the natural sciences. 3) The necessity for Chomsky to substantiate his linguistic theory with philosophical speculation. 4) The necessity for all language teachers to support
their educational practice with sound psychological theory. 5) The difficulty, if not impossibility, of finding solutions to the practical problems here alluded to based upon our present sketchy knowledge in the area of human psychology and physiology.

To repeat, the philosophical and psychological input is obviously essential to a theory of knowledge; the theory of knowledge is essential to a sound theory of F.L. teaching in particular, since we are dealing with that part of man which is specifically his and sets him apart from other animals: the faculty of speech, language. Finally, a F.L. classroom practice, of necessity, is based on some theory or combination of theories. This theory (theories) must be understood by the F.L. teacher.

3.4.0. SUMMARY OF CHAPTER III. The influence of empiricist-behaviorist theory can be seen in some F.L. classrooms in the following areas.

1. Concentration on language as speech(sound) and the detailed descriptions of these speech sounds from the articulatory and acoustic levels.

2. The physical segmentation of language and the study of language into real parts, e.g. phonology (phonetics and phonemics), morphology, syntax, semantics. (cf. Verbal Behavior, p. 15 ff.)
3. An unwillingness to consider speech-sounds as associated with specific meanings. "I think an analysis which deals with verbal behavior without appealing to mental concepts as meaning is a step in the right direction." 26.

4. A concentration on drill-method to substantiate the idea of language as a set of habits.

5. A conclusion that the native speaker is the absolute criterion of grammaticalness, i.e. that he is incapable of making an error in grammar.

6. The concept that formal discussion of grammar be subordinated to other "practical" language exercises.

7. Language difference is stressed over language universals.

3.4.1. Rationalist theory poses the following points for consideration by F.L. teachers and those preparing materials for use in F.L. instruction.

1. Competence and performance: the rules of the grammar do exist in the mind of the individual speaker/hearer.

2. A rationalist theory of learning rejects the empiricist-nominalist-determinist attitudes expressed in statements such as, "The scientific method is quite simply the convention that mind does not exist: science adopts the nominalistic attitude toward the problem of universals, in matters of procedure." 27.

3. That a deep structure exists and the grammatical rules of the deep structure actually generate surface structures.
4. An absolute distinction between humans and animals. Animals do not share human speech because it is not innate to them.

5. The existence of linguistic universals. All languages have utterances composed of NP's and VP's, a phonological system, discrete lexical items, idioms, metaphors, quantity, negation, questions, commands, substitutes, agreement, etc.

6. Virtually all children learn language. ("He is starting to talk.") Children learn the total system of their speech community, regardless of intelligence or parental teaching.

7. That although first-language learning is not equated with second-language learning, nor child learning with adult learning, any teaching method for language must be consonant with the principles of rationalist psychology.

8. That the individual has the ability, once he has internalized the rules of the grammar, to create and comprehend, spontaneously and effortlessly, sentences that are completely novel to his experience and that this is not explained by recourse to learning experiences since a child does not hear well-formed sentences in context but many false starts, snatches of speech, "baby talk," and ill-formed utterances.

9. That it is inconceivable that there exist in the human mind a separate representation for every utterance in a language.

10. That work with machine translation demonstrates this human characteristic of language. (e.g. "The ghost is agreeable but the meat is tender." for "The spirit is willing but the flesh is weak.") Significance is in the kind of error: one of free choice. If we could program a computer to function as a human, we would have to put human language into the machine. Since such language would be static(synchronic), it would not be truly human.
11. That language systems interrelate in ways that are so unpredictable that they have yet to be written into a lexicon.

12. That since language is more than a list of sentences, language learning is more than the memorization of a list of sentences. Memory limits the speaker; it does not limit language.

13. That grammar is an abstraction. The fact that speakers cannot often give a detailed analysis of grammar working in them is no more surprising than that they cannot give a similar analysis for physiological processes such as digestion, etc.

14. That grammar rules can be and often are violated, as, e.g. in literary devices, stylistic markers, etc. as well as in simple mistakes.

15. That the operation of a free system of constraints is a further indication of the human quality of language.

16. That language cannot be learned without meaning.

2. Ibid., p. 65.


4. Ibid., p. 33.


Language, 18(1942), p. 3.


9. Ibid., pp. 36-37.

Harcourt, Brace and World, 1964, pp. 21-22.

11. Ibid., p. 47.

12. Ibid., p. 48.


15. Ibid., pp. 24-25.


17. Ibid., pp. 29-30.

18. Ibid., p. 31.

19. Ibid., pp. 74-75.

20. Noam Chomsky, "Interview of N. Chomsky with S. Hampshire,"


4.0. While grammatical theory is valuable as a working hypothesis in describing natural languages, its value is not automatic for the teaching of language. Such value must be demonstrated. Unfortunately, a strict scientific demonstration is not feasible in any teaching situation due to the variables involved. For example, it is not possible to ascertain exactly what a group of teachers actually does in a classroom. Even the Pennsylvania F.L. Project, for example, which set up control groups, discovered that the group assigned to use "traditional" methodology actually incorporated more spoken language into the class meeting than the 25% allowed in the control.¹ Some teachers quite naturally misunderstand the rationale of a specific method. Reviewing the progress of Linguistics and Language Teaching in the United States in a monograph by the same name, William Moulton concluded that the work of Chomsky in transformational grammar would have a future impact on language teaching. But then Moulton concludes,

How will the language teacher react to this? To overstate the case, transformational grammar is nothing new to the language teacher; he has been using it for years. And yet, as
in so many other aspects of language teaching, here also he has been handling intuitively something which linguistic theory can help him to handle rationally and hence more effectively and more extensively. Though transformation grammar is too new to permit predictions, it seems likely that it can have far reaching effects in improving both the presentation of grammatical structure in textbooks and the learning of grammatical structure through classroom drill.

To be fair, we must note that Moulton's comments were written in 1960, only three years after the publication of Syntactic Structures, and so would have to be read in that context. However, even though the rationalist implications of Chomsky's theory were not as clear in Structures (nor probably in Chomsky's mind at that time), Moulton's suggestions for using transformational theory in language teaching seem to miss the point entirely.

4.0.1. The problem of labeling also enters the picture here. A good example of this is a book which has received wide exposure in the classroom and not undeserved praise from the F.L. teaching profession, German: A Structural Approach by Lohnes and Strothmann. The word Structural is very misleading, since the text is quite traditional in its approach, incorporating extensive grammatical explanation and numerous reading passages while there are no pattern drills of the new key variety to be found.
Certainly the total approach of the authors is rationalist in the basics in spite of the title.

4.0.2. Within the framework of demonstration open to us, then, we must attempt to show that current linguistic theory is practically applicable to the F.L. classroom. Since it is already quite evident that linguistic theory has had a forceful impact on F.L. teaching. (and we have repeatedly alluded to this fact throughout the paper), we shall now confine our remarks to what we see as future possible developments.

4.1.0. In line with the total outline of the paper, we shall attempt to present arguments for the following:

a) The contribution of psycholinguistics to the ongoing Rationalist-Behaviorist controversy and the resulting practical implications.

b) The continued application of tagmemic theory to the teaching of F.L. syntactic patterns.

c) The contribution of T.G. grammar in the formulation of a rule approach to grammar analysis.

d) The possible application of Stratificational grammar to individualized instruction.

e) The implications of code in F.L. teaching.
4.1.1. **PSYCHOLINGUISTICS, STRUCTURALISM AND P.L. TEACHING.** In terms of strict behaviorist-empiricist theory, which we have attached clearly to American Structuralism, we must beware of constructing straw men which we hope will stand for methods and materials currently in use. The earlier concentration on phonology (phonetics and phonemics), as seen in the contrastive series of the University of Chicago, does not regularly obtain in texts now being published. While no statistics are available, it seems very unlikely that there is any widespread practice now in use of isolating autonomous phonemes, searching for minimal pairs, or spending exhausting hours in language lab or electronic classroom drilling isolated "difficult" sounds.

The question current to the composition and utilization of textbooks is the total approach based on psycholinguistic theory. We shall take the position here, for purposes of study, that the theory of knowledge traditional in rational psychology is more apt for explaining language acquisition than is the behaviorist theory of experimental psychology. Based upon the considerations of *agere sequitur esse* ('action follows essence') already discussed in Chapter III, we shall also accept a limited theory of innate ideas as expressed in aptitudes for language as evidenced in the development of the normal and abnormal child.
4.1.2. A sufficient statement was made in the preceding chapter about the inadequacies of behaviorist theory to explain satisfactorily the facts of language learning as we experience them. The following statement from a recent abstract of Frank M. Grittner will summarize our position on strict behaviorist psychology and F.L. teaching.

Many people are now concerned about the widespread advocacy of behavioral objectives as a basis for building an efficient, cost-accountable foreign language curriculum. In reality, this "systems-analysis" approach to curriculum is neither new nor innovative nor of demonstrated effectiveness in the field of foreign languages. In fact, when applied to humanistic studies, behavioral objectives are potentially destructive. This is because their use is based upon simplistic psychological principles, outmoded pedagogical concepts, and morally questionable attitudes regarding the right of educators to manipulate the minds and emotions of human learners toward the achievement of externally imposed, standardized goals.... Worst of all, their use tends to suppress the more important outcomes of humanistic education that involve the ideosyncratic cultivation of internal mental states. Such phenomena as feelings, insights, values, and attitudes simply do not fit within the framework of "behavior shaping." Since it is such things which form the heart and soul of humanistic studies, the use of behavioral objectives is highly questionable beyond the level of rudimentary skill development. 4.
4.2.0. The rationalist reevaluation has caused language teachers to take a new look at the pattern drill and at the Direct Method (e.g. as taught in Berlitz schools) and the Series Method as formulated by François Gouin.

4.2.1. Fe R. Dacanay mentions 80 types of pattern drills in her *Techniques and Procedures in 2nd Language Teaching*. James Etmelyion includes even more in his *Pattern Drills in Language Teaching*. Accordingly, it is not convenient to lump all pattern drills into one. In general we note that the pattern drill concentrates on one structure, one idiom, or one kind of pronunciation problem. The purpose of the drill is to produce, through repetition, a habit pattern in the learner. A simple example would be

*Ich sehe einen Jungen.*

_________ Mann.

_________ Bleistift.

_________ Teppich.

The learner should gain several types of knowledge from this drill: the oral practice of repeating the pattern with the intonation pattern; the S-V-O grammatical pattern with the emphasis on transitive verb - direct object relationship; the grammatical gender of the nouns in the pattern: all *der* words, i.e. masculine.
Certainly the pattern drill has classroom value, specifically for the first objective; to a more limited degree for the others. However, the repetition of the pattern, whether by an individual learner or the choral recitation of the class, very quickly leads to boredom for both teacher and class, and the results, although difficult to ascertain with certitude, are not proportionate to the input.

4.2.2. One type of pattern drill, termed "rejoinder drill" by Etymology, may take the form of statement and response, as in formal utterances of politeness.

Wie geht's?
Danke, gut, und Ihnen?
Man muss zufrieden sein.
Das glaub' ich auch.

The drill may take the form of an actual dialogue of greater length.

Komm hier! Lauf nicht weg!
Ich laufe nicht weg. Warum schrien Sie so laut?
Du hast das Fenster kaputt gemacht; du und das Spielen.
Ich bin nicht am Schuld. Ich bin nur Zuschauer.
Unsinn! Selbst hab' ich dich gesehen. Du hast den Ball durch das Fenster geworfen.

Na ja. Was wollen Sie von mir?

Wer soll für die Fensterreparatur bezahlen?

Weiss nicht. Ich hab' kein Geld.

Schön gut. Ich schicke deinem Vater die Rechnung.

This type of drill is committed to memory. The obvious problem is that the rejoinder to each verbal cue must be memorized since there are few if any coherence points which the student can use as mental guideposts. In addition, it is difficult to establish a set number of syntactic patterns. The exercise amounts to almost free conversation, except that, as memorized, it is anything but free.

The behavior-oriented goal in these drills is to set up a sufficient pattern of stimulus-response associations within the student so that he will have a stock of patterned utterances stored in his verbal repertoire. These patterns he will draw on in his further use of the language. Again, although the test results of control groups are not completely conclusive, the evidence points to the fact that the system does not work effectively.
4.2.3. A substitute system which is in accord with rationalist theory simulates the series method of Gouin. Here the actual coherence of the utterances, syntactically and lexically, presents the student with hooks on which he can hang mental images and so connect the entire series, with or without hint cues in the form of key words. The series is not memorized and it does, to a degree, retain some freedom of expression for the learner. A typical sample would follow this pattern.

Der Junge geht in die Bibliothek.
Er sieht die Bibliothekarin.
Er fragt die Bibliothekarin um einige Bücher.
Er geht an ein Bücherregal.
Er nimmt ein Buch.
Er öffnet das Buch.
Er liest einige Seiten.
Er sieht manche schöne Bilder an.
Er macht das Buch zu.
Der Junge steckt das Buch wieder auf das Regal.
Er nimmt ein anderes Buch, ein großes Buch.
Er öffnet das zweite Buch.
Er liest die ersten sechs Seiten.
Er macht das Buch zu.
Er nimmt das Buch mit und geht zu einem Tisch.
Er nimmt an den Tisch Platz.
Er öffnet das Buch wieder.
Das Buch ist sehr schön. Es hat schöne Bilder.
Das Buch hat viele interessante Geschichten.
Die Geschichten sind Indianergeschichten.
Der Junge liesst Indianergeschichten sehr gern.
Er liesst zwei Indianergeschichten.
Jetzt ist es spät. Er muss nach Haus.
Er macht das Buch zu.
Er bringt das Buch wieder an das Regal.
Er sagt der Bibliothekarin Auf wiedersehen.
Der Junge geht nach Haus.

4.2.4. The inclusion of the above material in our discussion should not be seen as peripheral. The reestablishment of rationalist principles will involve the construction of materials based more on patterns of the series type than on the stimulus-response drills. Since psycholinguistic studies have brought this matter of materials preparation very much to the front of the pedagogical discussion, the question is quite germane to our study. 5.

4.2.5. Finally, while we must admit that individual professional preparation and teaching experience do, of necessity, color our judgments, we are not reducing this matter to mere opinion.
To someone steeped in behaviorist theory, mim-mem and pattern drill make sense in a way that they do not after a person has studied generative grammar and the rationalist theory of language learning. And firsthand experience with many language-teaching methods is the only thing which can give an adequate basis for evaluating any given method. A partial understanding of linguistic theory combined with narrow experience can lead to absurd results.

4.3.0. TAGMEMICS AND SYNTAX. Structural description need not find the F.L. classroom door closed. Tagmemics, for example, offers quite practical approaches for showing syntactic relationships.

4.3.1. There are a number of symbols regularly used in Tagmemics. These symbols may be used after a short explanation or other symbols may be substituted, as long as consistency is retained in symbol usage.

+  =  obligatory
+  =  optional
-  +  =  both optional, but one must occur and only one may occur.

Rules are read as follows:

+(a/b/c)  =  obligatory set
±(a/b/c)  =  optional set
\[ \pm \pm = \text{either/or} \]

\[ tCl = +S: N + P:tv \pm 0: N \pm L: RA \]

(transitive clause rewrites as a subject slot (NP), a predicate slot (transitive verb), an optional object slot (NP), and a locational slot filled by a Relater-axis (prepositional phrase).

e.g. \( tCl = \text{der Mann steckt das Geld in die Tasche.} \)

4.3.2. This slot-filler approach may be utilized as a series of formulae-like statements which describe a set number of recurrent F.L. patterns. The purpose is to keep the formulae as general as possible to give the "rules" the widest possible generality.

There are several advantages to this description, if it is used within predetermined limits: a) simplicity, b) utilization of familiar terminology, c) versatility of a test frame, much like the Ersatzprobe of Hans Glinz,\(^7\) d) a pattern for demonstrating morphonemic change.

As indicated, these formulae may be set up in a strict tagmemic form or in a simplified form. The following formulae would then be read as follows:
In German, a sentence may set up as a Subject + transitive verb (finite form) + object. Subject and object are both NP's.

\[ S - v^1 - o \]

Some verbs may take both an indirect and a direct object. This formula may be modified to include those verbs which may only take a dative object: helfen, danken, etc.

\[ S - v^1 - o^1 - o^2 \]

Some verbs do not take objects. Linking verbs take compliments.

\[ X - v^1 - S - o \]
\[ X - v^L - S - c \]

In German, initial slot may be filled by another particle besides subject. The finite verb retains second slot.

Other particles which may fill grammatical slots:

- temporal - gestern, vor der Wahl, etc.
- locational - auf der Strasse, hier, etc.
- manner - freilich, mit grosser Sorge, etc.
- subordinate structure - weil ich Angst hatte, etc.

Our pattern may now be extended to include the following:

\[ S - v^1 - o^1 - o^2 \rightarrow (T) (L) (M) (neg) \rightarrow v^2 \]
\[
V^1 = \begin{cases}
\text{aux} & \text{hhaben}
\text{werden} & \text{future}
\text{modal}
\text{main verb}
\end{cases}
\]

\[
V^2 = \begin{cases}
past\text{ participle (perfective,passive)}
infinite (\text{future, modal+}, \text{brauchen+})
participle + infinite (\text{passive})
infinite + infinite (\text{modal/brauchen+double infinite})
\text{separable prefix}
\end{cases}
\]

\[X - S - 0 \rightarrow V^2 \rightarrow V^1\]

In subordinate structure, \(V^1\) moves to the end of the clause, except in double infinitive structures where the finite verb precedes the infinitives immediately.

\[X = \text{adverb (nachdem, etc.)}
\text{conjunction (weil, etc.)}
\text{relative pronoun (der, etc.)}\]

4.3.3. This description lacks much in grammatical finesse yet retains power as a teaching tool. With the addition of a transformational component, the adaptability of the formulae increases proportionately.
For example, a transform may be applied to active, trV structures to produce passive sentences.

\[ S - V - O \rightarrow \text{\textsubscript{0sub}} + V^1(\text{werden}) + \text{von} + S^{01} + V^{PP} \]

In German, an SVO pattern may be transformed into a passive sentence: Object(subject form), finite verb (werden), von followed by subject (indirect object form), verb (past participle form).

Die Frau hasst den Mann.

Der Mann wird von der Frau gehasst.

4.4.0. T.G. GRAMMAR AND F.L. TEACHING. Although the philosophical and psychological implications of T.G. theory have definite application to F.L. teaching, we must still demonstrate that T.G. rules can be used successfully in the F.L. classroom. As Diller points out, "There is, after all, no reason why technical devices which are necessary for descriptive adequacy will also be necessary or even helpful for learning the language." Diller considers this conclusion implied in Chomsky's 1966 paper before the Northeast Conference on the Teaching of Foreign Languages. Certainly, Chomsky did go out of his way in not presenting generative theory as a possible panacea for F.L. teaching ills. However, this is not exactly the same thing as a
statement denying the possibility of using T.G. grammar in
the F.L. teaching situation.

4.4.1. Attempts have already been made to apply generative
timeory to the teaching of English grammar to American
Secondary students. The Roberts English Series by Paul
Roberts and the Oregon Curriculum: A Sequential Program
in English under the general editorship of Albert R.
Kitzhaus are two works which have extensive sections
devoted to rules based on generative principles.

Applying the same criteria to the English classroom
that we use for evaluating success in F.L. methodology
would indicate that it is impossible to form a truly
scientific conclusion due to the variables. A case in
point is an experience I had last year. On October 4,
1972, I was sent to Houston County, Alabama to address a
meeting of high school English teachers on the value of
T.G. grammar in the secondary curriculum and to attempt
to answer any questions the teachers might have. Houston
County was about to adopt an English textbook series
based on generative theory. My meeting with the teachers
(about thirty-five teachers were present), was less than
stimulating. During the question and answer period, I learned that only one individual in the group had ever studied generative grammar formally and this one teacher had taken only one summer school course the previous year. Obviously, any evaluation of the results of this experimental program in secondary school use of generative grammar must be limited by the lack of professional preparation on the part of the teachers involved in the experiment. If the experiment were unsuccessful, it would be difficult to assign the blame totally to the inadequacy of the grammar to explain the rules or to the weakness of the grammar for such an application to teaching method.

4.4.2. James R. Shawl takes exception to Diller's doubt about T.G. grammar's application to F.L. teaching in a review of Diller's book. Shawl also indicates the use he foresees T.G. grammar may be put to in the F. L. class.

Since the function of a generative grammar is to provide an explicit and enlightening concept of a given language's structure, it would seem to follow that second language learners receiving language data in terms of the explicit statements of grammatical composition and interrelationships provided by the generative grammar should benefit considerably. Notice that this in no way suggests
or even implies that the learner acquire a generative grammar as such, by drilling or by any other means, but rather, that the generative grammar descriptions of grammatical composition and interrelationships can provide him with a better understanding of the language data he is learning.

In this quote we should note explicitly the notion that the learner is not to acquire a generative grammar as such but rather that the generative descriptions, because they are clear and precise statements of language as rule governed behavior, should be of value in a language teaching method set up according to rationalist principles.

4.4.3. In using grammar rules patterned after T.G. analysis, the F.L. teacher should reduce symbols to a minimum. Since the economy principle of generative grammar demands economy, we are within the spirit of the system in demanding as great a degree of simplicity as the individual instructor considers possible.

Parentheses will be used here to indicate that the material within the parentheses is optional; braces conflate rules as parentheses may do, but items set in braces are different in that one must be chosen; brackets are used where rules differ in two places. We may then
read the following rules as:

\[ A \rightarrow C(B + D) \]  Rewrite A as C or as C + B + D.

\[ \{A\} C \Rightarrow E \]  A + C transforms into E.
\[ \{B\} C \Rightarrow E \]  B + C transforms into E.

\[ \begin{bmatrix} A \\ B \end{bmatrix} \Rightarrow \begin{bmatrix} X \\ Y \end{bmatrix} \]  A + B transforms into X + Z
\[ \begin{bmatrix} A \\ C \end{bmatrix} \Rightarrow \begin{bmatrix} X \\ Y \end{bmatrix} \]  C + B transforms into Y + Z

# will serve as a boundary marker
/__________ will indicate the environment of a rule.

Single and double arrows will indicate rewrite and transform respectively (as above).

We should attempt to keep other abbreviations "natural" and recognizable. e.g. +, =, ≠, etc.

4.4.4. The paradigm for the definite and indefinite articles in German is a common feature of fundamental German texts. We propose presenting a rule to cover each article. The definite article will be listed as \( \text{det}^1 \), the indefinite as \( \text{det}^2 \).
\( \text{det}^1 \Rightarrow \text{d}^+ \)

\[
\begin{align*}
\text{er/} & \quad \{ \text{sing. + dat.} \} + \text{fem.} \\
& \quad \{ \text{gen.} \}
\end{align*}
\]

\[
\begin{align*}
\text{plur. + gen.}
\end{align*}
\]

\[
\begin{align*}
\text{as/} & \quad \text{sing.} + \{ \text{nom.} \} + \text{neut.}
\end{align*}
\]

\[
\begin{align*}
\text{ie/} & \quad \{ \text{sing. + nom.} \} + \text{fem.}
\end{align*}
\]

\[
\begin{align*}
\text{plur. + } \{ \text{nom.} \}
\end{align*}
\]

\[
\begin{align*}
\text{em/} & \quad \text{sing. + dat.} + \{ \text{masc.} \}
\end{align*}
\]

\[
\begin{align*}
\text{en/} & \quad \{ \text{sing. + acc. + masc.} \}
\end{align*}
\]

\[
\begin{align*}
\text{plur. + dat. + N + (e)n}
\end{align*}
\]

\[
\begin{align*}
\text{es/} & \quad \text{sing. + gen.} + \{ \text{masc.} \} + N + (e)s
\end{align*}
\]
Number is redundant for this rule since $\text{det}^2$ is only singular.
Further symbols or symbol simplifications may be worked out, e.g. \( m = \text{masculine}, \ f = \text{feminine}, \) etc. Obviously there is no problem in doing this provided the symbols remain distinct and that \( n \) is not made to stand for 'nominative' in some rules and 'neuter' in others. A class can usually learn to read rules like the above after only one or two sessions.

It may, of course, be argued that the rule thus stated is little, if any, improvement over the standard textbook paradigm. We suggest this rule is better for the following reasons:

1. The rule sets up a grammatical context which the student can grasp all at once with the rule. This means that each morphosyntactic change is seen in the total syntactic environment, not simply as a separate box in a paradigm grid.

2. The declensional ending in the rule is more than just an ending to be memorized. Now it is seen as a morpheme: a meaningful element of the language. This is particularly critical for English-speaking F.L. students since English historically has simplified paradigms extensively and paradigmatic change is not clear to such students.

3. Substitution of other determiners in the rule is easily effected. Accordingly, det would also include \( \text{jeder}, \ \text{jener}, \ \text{dieser}, \) etc. and det\(^2\) will include \( \text{kein, mein, unser}, \) etc. As the latter forms have a possible plural function, the rule for det\(^2\) may be modified to allow for plural forms even though a grammatical constraint would block the plural from \( \text{ein}. \)
The two rules may also be conflated into one rule since there is considerable repetition. However, we have chosen to list the rules separately for the sake of simplicity and because these rules will be among the first presented to an elementary class.

The adjective rule which follows will show a conflated set of rules for both strong and weak adjective endings and include the section covered in some German elementary textbooks under "mixed" adjective endings. This rule then has the advantage of reducing repetition to a minimum. It has the disadvantage of looking more difficult to a beginning student and some definite difficulty in presentation in a restricted space.
4.4.5. In setting up rules for the German verb, we run into a number of constraints, e.g. very irregular verbs, such as *sein*, the modal auxiliaries, etc.; alternate forms as e.g. *buk* or *backte* as preterite of *backen*; vowel alternation in *du* and *er* forms of the present indicative, e.g. *sehen*, *siehst*, *sieht*. We repeat a norm for writing practical rules which we mentioned earlier: if we attempt to incorporate every constraint into a rule, we will go out of our minds. Given the limitations of a verb rule then, we insist the following rule is still powerful.

\[
\begin{align*}
\text{verb stem} - \text{pret.} &+ \\
\{1\text{st plur.}\} &\rightarrow \quad \text{verb stem} + \\
\{2\text{nd plur.}\} &\quad \text{e} \\
\{3\text{rd plur.}\} &\quad (\cdot) (e) t \\
\end{align*}
\]
The above rule includes in its domain preterite indicative and the subjunctive built on the preterite stem for weak verbs. For strong verbs, we need a new subjunctive rule.
In applying the T.G. rules to noun morphology, we find that the rule for number is too weak to be productive.

\[
\text{noun} + \text{plur.} \Rightarrow \text{noun } + \begin{bmatrix}
(\cdot)\text{e} \\
(\cdot)\text{n} \\
(\cdot)\text{er} \\
\ldots \\
\emptyset \\
s
\end{bmatrix}
\]

When the student seeks to apply this rule in a practical way he will find that, while the allomorphs of the plural morpheme are clearly shown in this rule for German, he still does not know the distribution of the allomorphs, except for the traditional "hints" language teachers use: vid. most die words form their plural in -\text{en}; -\text{s} is the plural for foreign loans; words in -\text{chen}, -\text{lein}, -\text{sel} have \emptyset plural marker, etc. English students are faced with similar allomorph decisions but, since the preponderance of English nouns now form their plural with \(Z_1\), the problem is not as productive.
With the rules now available to us at present in generative phonology plus the research we have been able to do, there is the probability that rules for German noun plurals can be written. However, as we shall see in our limited application of generative phonology to the teaching situation, and as we have already implied in the previous chapter, the fruitful application of such rules to F.L. teaching at this time is highly problematic.

It should be noted, however, that the rule as written for nouns is a global rule for German noun plurals and, although the rule is admittedly weak, we keep the approach consistent and the material is presented in a succinct manner.

A similar case in point concerns the morphosyntactic problem of specific members of set form classes being followed regularly or circumstantially by a specific oblique case form. For example, for German prepositions, we may set up the following rule.
For restricted forms, we may either add to the existing rule for prepositions or write another short rule.

\[
\begin{align*}
\text{prep. } + N & \rightarrow \text{ prep. } + \text{N + dat. } / \ldots \text{ aus} \ldots \\
& \quad \text{mit} \ldots \\
& \quad \text{von} \ldots \\
& \quad \text{etc.} \ldots \\
\text{prep. } + \text{N + acc. } / \ldots \text{ durch} \ldots \\
& \quad \text{ohne} \ldots \\
& \quad \text{bis} \ldots \\
& \quad \text{etc.} \ldots \\
\text{prep. } + \text{N + gen. } / \ldots \text{ trotz} \ldots \\
& \quad \text{wegen} \ldots \\
& \quad \text{etc.} \ldots \\
\end{align*}
\]

\[
\begin{align*}
\text{For restricted forms, we may either add to the existing rule for prepositions or write another short rule.}
\end{align*}
\]
In practical use, the rule would be extended to include those prepositions the instructor wished to include. Similar rules can be made for verbs where applicable, or, as in other languages, for specific forms (morphemes or conditioned allomorphs) in certain sets. Obviously we are left with asking the student to learn a list, but again we insist the presentation in this form is superior to a simple list.

Rules for the ablaut classes of German verbs present the learner with similar problems. At this time we would have to opt for the traditional principal-parts, which linguists have not been able to improve for classroom use. Rules can be written for the seven ablaut classes but they do not seem practical except for historical studies of language.

4.4.6. Similar rules may be written for personal pronouns, with the underlying forms generated by a series of P-markers and the oblique case forms transformed by a series of T-rules.
The formal second person pronoun (*Sie*) in German is treated here as a graphemic alternation with *sie*. Should this prove confusing to the student, another P-marker may be inserted in the rule and the new forms generated accordingly. Where there are homophonic forms in the surface structure, the underlying forms are questionable.

The implication of the above paragraph, as well as the lack of attempt here at total presentation, should indicate that the individual instructor must be able to construct and modify rules himself and not be forced to limit his class to the specifics of a text. When texts are constructed for F.L. classroom use which incorporate T.G. rules, the texts should be constructed with this principle of versatility in mind.

4.4.7. In the application of T.G. theory for classroom use, and there is work being done specifically in German syntax as, e.g. **Institut für deutsche Sprache** and the **Arbeitsstelle Strukturelle Grammatik** located in Mannheim and in East Berlin respectively, the large portion of the research has been in syntax (Bierwisch, Steinitz, etc) although today there seems to be a movement toward versatility as, e.g. Eggers and Schweisthal in computer data processing. Syntax is still the most productive area for classroom use of T.G. theory.
4.4.7.1. In writing syntax rules, the underlying structures may be shown as a tree diagram or as an ordered series of P-markers. The tree diagram has the advantage of speed and facility; the derived markers have the advantage of clear rule ordering, since ordering is not apparent in tree diagrams. Because the ordering of the PS rules will not ordinarily be critical for the language student, the tree diagram will be more commonly employed.

Examples of the above are as follows:

#das Mädchen weint bitterlich#

#S# → NP + aux + VP

VP → V + NP

NP → \{det + N\}

aux → T (haben + en) (M)

T → tense + mood + person + number

tense → \{+past\}

mood → \{indic.\}

person → \{1st\}

number → \{sing.\}

#das Mädchen weint bitterlich#

#S# → NP + aux + VP

VP → V + NP

NP → \{det + N\}

aux → T (haben + en) (M)

T → tense + mood + person + number

tense → \{+past\}

mood → \{indic.\}

person → \{2nd\}

number → \{sing.\}
det → das
N → Mädchen
V → weinen
adv → bitterlich

#das+mädchen-past+indic+3rd+sing+weinen+bitterlich#
or simply

\[
\begin{array}{c}
das Mädchen \\
weinen \\
-past \\
bitterlich
\end{array}
\]

4.4.7.2. The derivation of the aux rule as written does not belong properly in the phrase structure component of the grammar. The whole question of agreement is much better handled in the transformational component as an agreement rule. Such a rule would take the form of the verb rule we have constructed earlier. However, in the generation of the sentence as a grammatical description of the underlying structures, this material may be incorporated into phrase structure when this is considered practical for the class in the judgment of the instructor.

4.4.7.3. The node \( M \) in the aux rule as written must be seen as containing \textit{werden} also, even though this auxiliary verb is not traditionally listed with the modals. This inclusion will enable us to generate the underlying structures for a formal future of \textit{werden} + infinitive.
To construct an aux rule for German modeled on the English aux rule would present us with this form:

\[
\text{aux} \rightarrow C(M)(\text{haben}+\text{en})(\text{sein}+\text{en})
\]

One immediate problem with the rule is the lack of a progressive tense in German. To indicate this fact to the students will present a helpful contrast for their comprehension of the rule and its meaning.

Bach's early rule might also be substituted here.

\[
\text{aux} \rightarrow (\text{PP/perf}+ \left( \begin{array}{c} \text{Inf/ \text{werd}+} \\ \text{Past+} \end{array} \right) C
\]

4.4.7.4. According to our theory, however, we cannot generate the sentences of German with a finite state grammar such as the PS component alone offers us. To give our grammar the necessary power to generate the sentences of German we must employ transformational rules. As in the other applications, it will be necessary to go through several reading sessions with the class before they will be able to read the rules.
4.4.7.5. The following derivation of a German sentence will illustrate the application of T.G. theory to practical syntactic description.

#Es wäre nett gewesen, wenn ich gestern nicht in die Schule hätte gehen müssen.#

Since there are clearly two underlying sentences, we will set up distinct tree diagrams for the PS derivations.
The matter of handling nodes for question, imperative, negative, conditional, etc. must also be considered. Based on the Rationalist axiom for final causality, "first in intention, last in execution," these nodes belong properly to the deep structure. Accordingly, we shall incorporate negative and conditional nodes into our phrase structure of this sentence as optional elements.

\[ S \rightarrow \text{(cond)(neg) NP - aux - VP} \]

These nodes will be carried along into the transformational component where optional rules will resolve them. Applying the definition of \( S \) as now written, we derive the following kernal sentences:

\[ es \rightarrow \text{past+sein+en - sein - nett} \]

\( \text{(cond)(neg) ich - past+haben+en + müssen - gehen - gestern - in die Schule} \)

We shall now apply the transformational rules in order. We shall present the transformed string after each rule is applied, not because this must be done in all cases, but rather to demonstrate clearly to the beginning student the operation of the rule on the string in a concrete manner. With familiarity, this step may be omitted for time saving.
1. Tob affix  \[ Af + Vs \Rightarrow Vs + Af \]
where: \( af = \text{T, en} \)
\( Vs = V, M, \text{haben, sein} \)

By#1.  
\[ \#es - \text{sein+past} - \text{sein+en} - \text{nett}\# \]
\[ \#(\text{cond})(\text{neg}) \text{ich - haben+past-müssen+en - gehen - gestern - in die Schule}\# \]

2. Topt. emb.(cond)

\[
\begin{align*}
&X + \text{aux} + Y + Z \\
&X' + \text{aux} + Y' + Z'
\end{align*}
\]
where: \( X + \text{aux} + Y + Z = \text{separate kernal sentences} \)
\( X' + \text{aux} + Y' + Z' \)
\( (W) = \text{optional subord.conj. wenn} \)
\( \text{aux} = +\text{past} ( ) ( ) \)

By#2.

\[ \#es - \text{sein+past} - \text{sein+en} - \text{nett} +\text{wenn+} (\text{neg}) \text{ich - haben+past - müssen+en - gehen - gestern - in die S}\# \]


\[ \text{neg+X + Y + Z} \Rightarrow X + Y + \text{nicht} + Z \]
where: \( Z = \text{verb compliment} \)
\( \text{pred. N or adj.} \)
\( \text{Directive (Locational)} \)

By#3.

\[ \#es - \text{sein+past} - \text{sein+en} - \text{nett} +\text{wenn+ ich - haben+past - müssen+en - gehen - gestern +nicht+ - in die S}\# \]
4. Topt. Verb Ordering \( X + Y + Z \Rightarrow X + Z + Y \)

where: \( Y = \inf/M \)
\( PP(PP)/\text{Perf} \)
\( \text{Passive} \)
\( \text{Part.} + \text{Inf.} \)
\( \text{sep. prefix (vb.compl.)} \)

By#4.

- sein+past - nett - sein+en + wenn+ ich - haben+past
- gestern - nicht - in die Schule - müssen+en - gehen#

5. Topt. Modal Ordering \( X + Y + Z \Rightarrow X + Z + Y \)

where: \( Y = M + en \)
\( Z + \text{Inf.} \)

By#5.

- sein+past - nett - sein+en + wenn+ ich - haben+past
- gestern - nicht - in die Schule - gehen - müssen+en#

6. Topt. Dbl. Inf. \( X + \text{Inf.} + PP \Rightarrow X + \text{Inf.} + \text{Inf.} ^* \)

where: \( PP = \{ \text{brauchen} \} + en \)

By#6.

- sein+past - nett - sein+en + wenn+ ich - haben+past
- gestern - nicht - in die Schule - gehen - müssen#
Topt. Subord. \( X + V + Y + (Z) \rightarrow X + Y + V + (Z) \)

where: \( X + V + Y = \) subord. clause
\( V = \) finite verb
\( (Z) = \) inf + inf'

We will then apply the verb rule as previously written or an abbreviated agreement rule.

\[
\begin{array}{c}
\text{Vs} + \left[ \begin{array}{c}
\text{mood} \\
\text{person} \\
\text{number}
\end{array} \right] \rightarrow \left\{ \begin{array}{c}
\text{indic.} \\
\text{imp.} \\
\text{sub.} \\
\text{1st} \\
\text{2nd} \\
\text{3rd} \\
\text{sing.} \\
\text{plur.}
\end{array} \right.
\end{array}
\]

Phonological rules:
sein+past+sub+3rd+sing \( \rightarrow \) wäre
sein+en \( \rightarrow \) gewesen
haben+past+sub+1st+sing = hätte

By the application of the abbreviated phonological rules:
#es - wäre - nett - gewesen +wenn+ ich - gestern - in die Schule - nicht - hätte - gehen - müssen#

4.4.7.6. We would be naive if we suggested that the above derivation is in the form to make it immediately palatable for elementary students. Nor are we suggesting that a derivation of this type would necessarily be an aid to any language class. What we do suggest is that a new grammar is going to demand a new approach and a new attitude toward the presentation of language. The new attitude must, it would seem, encompass an openness to experimentation; a new approach will entail preparation different from what existing methodology has given. The derivation does certainly present a theoretical detail of the workings of deep structure. This detail can be of help in seeing the operation of low level rules, since the rules are, by necessity, applied one at a time.

4.4.5. Phonology. The question of taxonomic phonemes and autonomous phonemes has already been covered at sufficient length in Chapter II. In applying the theory of generative phonology to language learning we should bear in mind that
the descriptions of generative phonology are descriptions of mental states, not of physical acts. While we agree that separating the study of language sounds from the totality of language study is an artificial and unscientific approach, we also must insist that the encoding and decoding performed by speakers is concerned with physical sounds. The descriptions of articulatory phonetics, where descriptions are needed, are superior to generating surface representations by applying ordered rules to underlying forms.

Insofar as phonology can be integrated into the whole fabric of language and related directly with the entire grammar (which is the goal of Generative Phonology), its study will unite rather than fragment the beginner's approach. However, the current state of the question does not make this possible, except for those trained specifically in generative phonology. Even for this elite group, as noted above, the present state of Generative Phonology makes the direct description more practical for the teaching situation.

4.5.1. However, something should be said for preparing students for a more ambitious program: a program which would prepare an individual not for a specific P.L., but for language study in general. The concept is certainly
not new. The Summer Institute of Linguistics has been working along the lines of such a program since its inception. They train individuals to study language. Such a program would be the theoretical foundation upon which any language study might be built. Within an environment of this type, experimental methodology would be allowed to breathe and grow.

4.5.2. At present we approach phonology in a matter of fact way, usually giving special emphasis to "problem" areas. These problems might be individual or problems we anticipate either from experience or from the nature of the sound system of the language to be studied in contrast with the students' native tongue. One difficulty of this approach is that the student concentrates on distinctive features but he fails to grasp the non-distinctive features: the features which do not signal same/different, i.e. cause meaning difference, but which do signal native-non-native to the native speaker. We see this in the case of our American speakers attempting German vowels. Where Americans realize all vowels as glides, some speakers even realizing consistent full diphthongs and occasionally even triphthongs, this would not generally set up oppositions in German and so would not involve distinctive features or
signal a difference in meaning. Still, this vowel realization creates interference for the native German speaker. In questions of this type we find no help from Generative Phonology.

4.5.3. As Schane suggests in his "The Phoneme Revisited,"

It is not the purpose of this paper to refute the evidence against an autonomous level of phonemic representation. The theoretical arguments against such a level are sound, and the linguistic data brought forth to support the arguments are convincing. Rather, I wish to claim that the notion of surface contrast, which lies at the very heart of classical phonemics, plays a significant role within phonology; until generative phonology can capture this notion, it fails to characterize an important aspect of linguistic systems. ...

Ideally, the output of a generative phonology should be a detailed phonetic specification. However, nearly all generative descriptions to date stop far short of rules providing for fine phonetic detail, and even rules for grossly obvious allophones are often not given. ...generative phonologists have been concerned primarily with morphophonemics. 13.

4.5.4. Some instructors may find value in presenting certain phonological material in the form of rules. As a neat statement of phonological fact, then, generative phonology can contribute rules such as the following
as an example of the type of rule a teacher might write for a class.

\[
\text{Obstruent} + \text{voiced} \rightarrow \text{-voiced} / \underline{\quad} \# \quad \{+C\}
\]

\[
\begin{bmatrix}
  b \\
  d \\
  g
\end{bmatrix} \Rightarrow 
\begin{bmatrix}
  p \\
  t \\
  k
\end{bmatrix} / \underline{\quad} \# \quad \{+C\}
\]

4.5.5. T.G. grammar also presents material for use in contrastive analysis of English and German. The contrast between prepositions and verb particles (Rosenbaum, 1968) in English helps to ease the American student into German separable prefixes. The necessity for a DO-insertion rule after a negative (Go!/Don't go!) is not mirrored in German (Geh weg!/Geh nicht weg!). The derivation of such specifically German structures as the extended adjective modifier (das mir gehörige Buch) may also be contrasted with the embedded clause construction: optional in German, obligatory in English. Such use of T.G. grammar is most practical in explaining grammatical sameness and difference.
4.6.0. STRATIFICATIONAL GRAMMAR AND F.L. TEACHING. In his preface to *Linguistics and English Grammar*, Henry A. Gleason remarks, "My own preference and conviction run to Stratificational grammar. This has not yet received the development which would make it a possible contender for use in the schools;..."\(^1\). The possible (and necessarily future) use Stratificational grammar will have for the teaching of F.L., this writer sees in these areas:

a) As mentioned in Chapter II, much of the work done by Lamb and his colleagues has been associated with computers. Insofar as computers may profitably implement work in linguistic analysis, and reductively the grammatical analysis needed for F.L. instruction, Stratificationalists should have an advantage - at least in the time factor.

b) Because Stratificational grammar works with *strata* and *levels* of language which are the subsystems within the entire system of language, the grammar works from the highest to the lowest *stratum* within one system. In theory, this may approach closer to the T.G. ideal of unity than the generativists themselves with the tripartite grammar. This remains to be seen.
c) Because the system of Stratificational grammar is based on item and arrangement rather than item and process, the actual system is less complicated and the rules are not necessarily ordered. While we do not see IA grammars as powerful enough to describe language adequately, IA can be useful for the F.L. teacher for showing some fundamental relationships. E.g.

\[
\text{der Mann } \quad \text{---agt---hassen---gl---die Frau}\]

\[\uparrow \quad \text{past}\]

The relationships here are of Actor---Action---Goal. The man is the agent, the action is to hate, the goal of the action is the woman. Both active and passive structures may be seen immediately from this.

4. While this writer sees little utility for this grammar at present in the repertory of the F.L. teacher, Stratificational grammar must be included at least in passing. As with other descriptions of grammar discussed here, it remains with the teacher to apply the theory to the classroom. No application can be made if we are not aware of the theory and of the work being done with the theory.
4.7.0. CODE AND F.L. INSTRUCTION. Finally, we should concern ourselves with the language code: what language shall we teach in the classroom? In some instances, we may be attempting to initiate students into a F.L. performance which is actually more sophisticated than their own native language performance. We must define the code in such a way that we restrict the competence goals of our students. Consequently, performance will also be limited but only in accordance with the code. Bernstein refers to these concepts as restricted and elaborated code. 15.

4.7.1. Applied to the study of German, the question of code is very practical. If we examine German from the period of Goethe, we find that 80% of the sentences contained either subordinate clauses or infinitives. The number today has dropped to 40% and almost 3/4 of these subordinate clauses are simple relative or dass clauses.16. The average sentence length has altered drastically, as would be expected, and also changed substantially in composition as to a) lexicon, b) style of expression, c) tense usage (e.g. preterite is dying out), d) simplified use of mood (fewer subjunctives and more regular use of werden (würden) + infinitive), e) extensive loan word usage; not novel, certainly, but more extensive
4.7.2. The question of code in F.L. is not unlike the dilemma facing American educators in urban areas where large numbers of pupils in primary and secondary schools do not come from environments speaking the standard language, and, it would seem as a result, find the American public school a near mystery. This problem is one of the contributing causes of widespread illiteracy among many in non-dominant socio-economic groups.

The term restricted code does not mean necessarily that certain linguistic signals are absent from the competence of a specific speaker/listener, but only that these signals will be used infrequently or used only in certain contexts. Nor is it certain whether these restrictions of code are equated with educational deficit rather than with linguistic or cultural deprivation. As yet, we cannot pin-point features of the restricted code and prove conclusively how these produce failures of performance.

4.7.3. Just as the term non-standard has objectional connotations among very many Americans, so the expression Umgangssprache is interpreted by many, Germans and others, to mean the speech of the lower socio-economic classes and, hence, uneducated speech. If by uneducated
speech we mean language significantly different from that employed by Goethe and Schiller then, of course, we are right. But if uneducated means structurally inferior, inferior as a code, then we are wrong. William Labov and his team of researchers have done extensive studies in New York to disprove a similar claim against the speech of urban ghetto peoples, specifically claims by Carl Bereiter and Siegfried Englemann as reported in their *Teaching Disadvantaged Children in the Preschool*.

In Germany, Hans Eggers is attempting to cool heads with the substitution of terminology: *alltägliche Sprechsprache*¹⁸ instead of the dichotomy *Umgangssprache* and *Hochsprache*.¹⁹ (One is here reminded of the now revolution in terminology which seeks to remove an onus, real or imagined, from certain occupations. Hence, cleaning woman becomes "domestic." In German, a similar reaction has set in: *Putzfrau* to *Haushaltsangestellte.* ) The discussion becomes one of semantics: surface social implications over serious social implications.

4.7.4. The practical application is much more than semantics, however, since a difference in code which is substantial will stratify a society, just as a common
linguistic code will tend to level aspects of a society. A consideration of R.P. in Britain is a good case in point. Sociology and economics are somehow made more poignant when language enters the picture.

4.7.5. There is no question that speakers who are forced to operate with a restricted code are limited. This is by definition. The question is whether the restriction is one which we might well exploit in the F.L. classroom. Bernstein defines the role of education here as leading one to an awareness of limitations and to present models (previously lacking) for imitation which will force him to move into an elaborated code or codes. Our application may well be deliberately to expose students to more elaborated codes after they have mastered the restricted. With this idea must go an awareness, as noted above, of the limitations for F.L. study the student's own code restrictions in his native language place on him. Failure to consider this idea in the composition of materials and in the presentation of grammatical explanations will result in confusion and ultimate failure - regardless of method used.
4.7.6. In practical points, this concept would limit our presentation in terms of lexicon, morphology, paradigm, even syntax. Greater stress would be given to the current speech rather than to the literary language with the morphological and syntactic implications of that change in stress. Gradually, as the restricted code for the F.L. is mastered, more elaborated codes will be presented. Obviously, the preparation of materials will be a demanding job and, while the idea is fascinating and is receiving attention (cf. *Exploration in Language for Infant School Children* by D.M. Gahagen and G.A. Gahagen.) the concept needs clarification in the specifics.

4.7.7. Does this mean that F.L. study will abandon the classics? The question is not even relevant? A better question might be, how many of our students are quoting *Faust* or *Don Carlos* now?
NOTES - CHAPTER IV


5. For an interesting discussion of private language schools, both those modeled on behaviorist as well as those modeled on rationalist psychological theory, see Vincent Marottoli, "The Success of Private Language Schools: A Lesson to be Learned," F.L. Annals, 6 (March, 1973), pp. 354-358.


17. Ibid.


5.0. The work of American linguists has had a profound effect on language teaching. We have attempted to trace this effect in these pages. The effect has not, however, been universal.

Where the teaching of the languages themselves is concerned, there exists a latent conflict between the grammarian's approach and that of the linguist, and there is some ground for concern over the obsolete character of certain traditional forms of "grammatical analysis" still being presented to the student as "logical," while modern linguistics, which represents such an incomparable fund of educational material, frequently remains almost totally absent from secondary-school programs.

Insofar as the above quote is true, we might be tempted to impose blame for what we feel to be an inadequate situation. We should fight any temptations of this kind.

5.1.0. When we address ourselves to linguistics today, what we are discussing is a discipline that is so new and so rapidly changing that it must be discussed in
terms of the contemporary influence of linguistics. If Bloomfield is the "Father" of American Linguistics, we realize that the "history" of the science is a scant forty years old. In this type of situation, perspective is not a common commodity.

5.1.1. As we noted, a crisis situation rocketed the elite community of American linguists into the F.L. teaching sphere, perhaps before they were prepared. With the judgment of hindsight we may speculate that they seemed to do the best job possible, given the state of the theory at the time. That the theory has now been re-examined and that some of the practical applications to the F.L. classroom are now judged inadequate is not a mark of decadence but a sign of life.

This point must be stressed at the conclusion of our treatment because the least service American linguists can pay to the community of F.L. teachers is to make their own intradisciplinary disputes into accusations against F.L. teaching. The average teacher is in no position to master all the disciplines of linguistics before he/she enters the F.L. classroom. The admitted state of the art presently is such that linguists them-
selves are unable to state with any degree of certitude what single system encompasses answers to all the grammatical and descriptive problems the teacher will face in his career.

We do not need any more polarization. What we do need is

... a middle way, one which does not begin by removing all prior epistemic conceptions - since without these we can state no relevant empirical questions - nor insists that our initial epistemic conceptions are final... but one which pursues empirical and analytic studies, patiently and piecemeal, in the light of one another's results. 2.

What does Chomsky mean when he says that the aspects of language are innate? Obviously no children are born speaking a language: German, English, French, etc. Yet, also obviously, there is something very special about the human baby in virtue of which he, but not any of his brute brothers, if exposed to language, ends up speaking a language. These are the facts.

The problem comes in the degree to which the abilities of the child for language acquisition are actually special to language. If we follow the extreme
Behaviorist position which insists that only stimulus-response is a valid learning mechanism, then we are limited to choosing association as functional in this case. Chomsky holds that the mechanisms for language learning are 1) special to language, and 2) innate in the human being. This is a clear case of opposites: extreme empiricism vs. extreme nativism.

Certainly we need empirical facts to define innateness. We need a definition of innateness to know which empirical facts are relevant. We need both psychology and philosophy.

5.2.0. As explained, taxonomy and T.G. grammar do not go together. The grammar of rules and the grammar of physical description do not mix. Taxonomists have more factual influence to their credit in the F.L. teaching sphere, but it may be argued that much of this influence was obtained only with political aid. Besides, much of the structural approach to method is now under attack. T.G. grammarians claim to have the answers for the shortcomings of taxonomists, but they have not demonstrated any great proficiency in the teaching of language.
In fact, some of the leading voices in the school disclaim any competence in this area at all. To paraphrase a recent commercial for dry cereal, "What's a poor language teacher to do?"

Structuralism has had its day, and now the air is thick with controversy again. Before assessing the direct effects of the new linguistics, we should look at the effects that are simply the result of change, any change. When a government falls, its old enemies as well as its new ones emerge — one sees monarchists and revolutionaries fighting in the same ranks. So one noteworthy result of the decline of structuralism and the rise of formalism has been the resurgence of traditional grammar. In the field of Spanish textbooks, the two biggest money-makers in the last five years have been one book originally published twenty years ago and lightly refurbished, and another done five years ago that is entirely traditional in its outlook, though in every respect an attractive book. It was to be expected that traditional textbooks would make a comeback, at least temporarily, because generative transformational grammarians have made a point of their kinship with traditional grammar. Of course what they mean is their kinship with Otto Jespersen, not with Goold Brown, but for teachers unaware of this any traditionalism gains in respectability. 4.

5.2.1. The kinds of language programs that we anticipate will require highly-trained professionals who, as this writer views the passing scene, will evolve only accidentally from the literature-oriented graduate faculties that generally produce most of our F.L. teachers.
Native speakers who are in America teaching their language obviously have a head start. But a head start is not being there. More needs to be done; more than just repeating the teaching of our teachers; more than just adding a methods course to the teacher-training curriculum. 5.

True, there are those who will argue that the success (or lack of it) is no worse in foreign language than in any other discipline taught today. 6 This is non-demonstrable; but, if it were, it would still seem a poor motive for mediocrity. The purpose of teaching language is teaching language and the success of that teaching must be measured accordingly. To do less hardly seems fitting to any definition of a liberal education.

5.3.0. We have attempted to show here that linguists are very much involved in the achievement of this purpose. It would be utopian to believe that linguistics will develop the method for F.L. teaching. Given the variables, it remains doubtful that such a reality exists or ever will. But it would be unfortunate for F.L. teachers and their students if linguistics, now moving into so many different directions, were to abandon the ancilla role; a role, we have repeatedly indicated, that originally brought
American linguistics from practical obscurity to national prominence.

For now, applied linguistics must work out a synthesis, not of theory, but of method; not as the last step, but as a step in the right direction. A-LM was a valuable detour, lengthened and exaggerated by the times. Now we must get back on the road.
NOTES - CHAPTER V


5. Gilbert A. Jarvis, "Teacher Education Goals: They're Tearing Up the Street Where I was Born," F.L. Annals, 6 (December, 1972), pp. 198-205.


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"Behavioral Objectives, Skinnerian Rats and Trojan Horses," *F.L. Annals,* 6 (October, 1972), pp. 52-60.


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Vita

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