Special Issue on

LANGUAGE FOR SPECIAL PURPOSES

EDITED BY
J RONAYNE COWAN

Volume 2, Number 1, Fall 1977
Studies in Language Learning (SLL) is primarily concerned with applied linguistics, and specifically with language acquisition, language pedagogy, stylistics, and language planning. SLL gives preference to contributions which are of theoretical and/or methodological interest. SLL aims at developing an interdisciplinary cooperation between faculty and students working in language-related fields in humanities, social sciences, education, and other disciplines. In order to promote such interdepartmental exchange of ideas SLL has a number of editorial advisors representing various disciplines.

Contributions: SLL includes PREPUBLICATION versions of contributions from the faculty and students of the University of Illinois. Invited contributions from non-University of Illinois faculty and students may also be included. SLL encourages detailed papers which present the state of the art of various subfields of applied linguistics and focus on current insights and controversies in the language-related fields. Shorter notes and comments will be published in the Notes and Comments section. Contributions should be sent to J Ronayne Cowan, Department of Linguistics, 4088 Foreign Language Building, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801. The style sheet and details for the typing of manuscripts are available from the editor.

Book Reviews: Publications should be submitted to Hans Henrich Hock, Review Editor, SLL, Department of Linguistics, 4088 Foreign Languages Building, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801. The Review Section will include detailed reviews or review articles, for which two review copies should be submitted. In addition, there will be Short Notices and a listing of Publications Received, for which one copy should be submitted.

Special Issues: SLL will devote one issue each year to a special topic. The next special issue will be devoted to Language and Culture. (For details see back cover.)

Subscriptions: SLL is published twice during the academic year in fall and spring. The subscription is $3.00 per issue. Orders may be sent to SLL, Subscriptions, Unit for Foreign Language Study and Research, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801.

Publication of the Unit for Foreign Language Study and Research University of Illinois at Urbana-Champaign

Price of this issue $3.00
## CONTENTS

### ARTICLES

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>iii</td>
<td>Preface</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Special Courses in Russian</td>
<td>Rasio Dunatov</td>
</tr>
<tr>
<td>17</td>
<td>Learning to Read German: A Search for Relevant Models</td>
<td>Karl J. Fink</td>
</tr>
<tr>
<td>45</td>
<td>The Comprehension of English for Science and Technology Arguments and Definitions</td>
<td>John E. Lackstrom</td>
</tr>
<tr>
<td>67</td>
<td>The Teaching of Pronunciation</td>
<td>James W. Marchand</td>
</tr>
<tr>
<td>89</td>
<td>Recent Developments in Memory Research and their Implications for Foreign Language Teaching</td>
<td>Bernice Melvin</td>
</tr>
<tr>
<td>111</td>
<td>English for Special Purposes: An Analysis and Survey</td>
<td>Peter Strevens</td>
</tr>
<tr>
<td>137</td>
<td>Trends and Issues in Teaching French to Migrant Workers</td>
<td>Georges Zask</td>
</tr>
</tbody>
</table>

### BIBLIOGRAPHIES: LANGUAGE FOR SPECIAL PURPOSES

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>155</td>
<td>Selected Bibliography of Literature Pertaining to the Teaching of English for Special Purposes</td>
<td>J Ronayne Cowan</td>
</tr>
<tr>
<td>170</td>
<td>Selected Bibliography of Soviet Literature in Special Register Russian Courses for Foreigners</td>
<td>Rasio Dunatov</td>
</tr>
<tr>
<td>172</td>
<td>Selected Bibliography of Literature in German Special Register Courses and Word Frequency Counts for German</td>
<td>Karl J. Fink</td>
</tr>
</tbody>
</table>

### REVIEWS

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>175</td>
<td>Language Development: Structure and Function (J Ronayne Cowan)</td>
<td>Phillip S. Dale</td>
</tr>
<tr>
<td>186</td>
<td>Bilingual Education: An International Sociological Perspective (Yamuna Kachru)</td>
<td>Joshua A. Fishman</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Author</th>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. B. Fry</td>
<td>189</td>
<td><em>Acoustic Phonetics: A Course in Basic Readings</em> (Chin-Woo Kim)</td>
</tr>
<tr>
<td>Insup Taylor</td>
<td>192</td>
<td><em>Introduction to Psycholinguistics</em> (S. N. Sridhar)</td>
</tr>
</tbody>
</table>

**ANNOUNCEMENTS**

196 *Catalan Conference*
A very decided trend toward specialization within the field of language pedagogy has developed over the past eight years. The appearance of articles dealing with aspects of "special purposes" language training in applied linguistics journals has become almost commonplace, and textbooks purporting to teach languages for "specific" or "professional" purposes have begun to flood the commercial marketplace. In less than three years two journals devoted solely to language for special purposes, English for Special Purposes in the Middle East and North Africa (ESPMENA) and Lingua para Objectivos Specificos, and a UNESCO sponsored network of centers for the dissemination of developments in this area, the ALSED-LSP network (Anthropology and Language Science in Educational Development) have been established. It therefore appeared most appropriate to bring out a special issue of Studies in Language Learning which focuses on this fast developing field.

In order to provide coverage of the many dimensions of this topic, the Editorial Board invited guest articles by prominent authorities in the field. Chief among these is Peter Strevens, a scholar of international standing in applied linguistics. John Lackstrom is known for his work on the analysis scientific discourse and Georges Zask has pioneered the development of language materials and methodology based on a consideration of the society of a minority group, migrant workers in France.

J Ronayne Cowan

Urbana-Champaign

October 1, 1977
SPECIAL COURSES IN RUSSIAN

RASIO DUNATOV

Abstract

The article discusses several types of special "reading only" courses developed in this country, as well as the special courses developed in the Soviet Union for teaching Russian to foreigners studying at their institutes of higher learning. The Soviet method consists of a preparatory four-skills course for students with minimum knowledge of Russian, or none at all, followed by special register courses simultaneous with students' subject courses. An important element of these special register courses is a minimum vocabulary in the specific discipline, as well as an emphasis on lexical and syntactic constructions favored by that discipline. These are compiled by frequency analyses of basic textbooks in each discipline.

Studies in Language Learning
Volume II, Number I, Fall 1977
RASIO DUNATOV is an Associate Professor of Russian and Slavic Languages and Literatures at the University of Illinois at Urbana-Champaign.
This article is a brief survey of several types of Russian language special courses offered by college and university Russian departments in this country, and of similar courses described in Soviet pedagogical literature. For the purpose of this survey, a special course will be defined as a language course whose principal objective is not the acquisition or perfection of a four-skills mastery of the language. Excluded from this survey, therefore, are the traditional first- and second-year courses, as well as the third- and fourth-year "structure", "usage", "composition", "conversation", "stylistics", etc. courses whose objectives are to strengthen and perfect the skills acquired in the first and second year.

The oldest and still the most common Russian language special course is the "reading only" course. There are actually two types of such courses, one aimed at a rapid acquisition of a usable reading knowledge of technical or scientific prose, frequently in a specific discipline, and the other aimed at a passive reading ability in the belles-lettres literature. The former usually lasts two semesters (2-4 hours per week), and the latter four semesters (3-4 hours per week).

The belles lettres reading course, to my knowledge still quite rare, grew out of the frustrations experienced by some instructors in trying to achieve a usable four-skills fluency in Russian within the two years that most schools (and students) allocate for the study of a foreign language. Such a course was first proposed in 1966 by Nathan Rosen¹. His argument was that, because of the relatively com-
plex grammar, and (even more importantly) because of an almost complete lack of recognizable cognates, no usable four-skills fluency in Russian can be developed in four semesters. As a result, students become frustrated and drop out. As a remedy for this, Rosen proposed a two-year course whose objective would be a realistic one; namely the acquisition of a reading skill sufficient to read Russian rapidly and without the frequent use of a dictionary. Three or four semesters of this type of training would not only be a worthwhile end in itself, but would also provide a sound base with which to then acquire the other skills for those students interested in doing so.

Rosen's proposed four-semester course consists of the following:

First Semester: Russian alphabet and basic rules of pronunciation; passive knowledge of grammar using a limited (300-400 words) vocabulary.

Second Semester: Vocabulary building using readers with visible vocabulary. Students read and decipher the assigned passages at home and do "smooth" and "rapid" translation into English in class. Occasionally they are asked to read aloud in class.

Third and Fourth Semesters: More of the same, with reading material increasing in difficulty; grammar review, especially word formation.

Examinations in Rosen's course consist of three parts: 1) translation of previously read materials, 2) translation of unfamiliar passages, 3) grammar questions based on the materials in the assigned grammar textbook.

By the end of the second year, Rosen claims a student in this course "has an excellent knowledge of grammar, mostly passive, ... has
an excellent passive vocabulary in fiction and non-fiction..., (and) can read any text of average difficulty rapidly, accurately, and with pleasure" (1966: 62). Nor is the student who completes this course forever doomed to only reading Russian. According to Rosen, this course provides an excellent preparation for one of the intensive summer semester four-skills courses offered at a number of places in this country and abroad. "Since his grammar and reading vocabulary are excellent, and his pronunciation is correct, he can concentrate all his energy on just one object: to transfer his passive vocabulary into an active, spoken vocabulary" (1966: 63).

To read scientific Russian rapidly and accurately one needs approximately one half the time recommended by Rosen for his course. There are several reasons for this: 1) scientific literature requires a far smaller vocabulary than belles-lettres; 2) a substantial portion of scientific vocabulary consists of easily recognizable borrowings (e.g. atom, biologia, gramm, doama, etc.), calques (e.g. izlozhenie "exposition", vliinanie "influence", etc., or combinations consisting of a Russian and a foreign term (e.g. radiouzel "radio network", polkilo "half a kilo", etc.)²; 3) scientific Russian tends to favor certain grammatical constructions (e.g. third person verbs, participial and gerundial phrases, use of instrumental case in the predicate, especially in definitions, etc.); and 4) students in scientific Russian courses tend to be more highly motivated and therefore learn faster.³

As in the course described earlier, the first semester is spent learning the alphabet and rules of pronunciation (1-2 weeks), and acquiring a passive knowledge of the grammar. The exercises consist primarily of recognizing words and grammatical forms, and translating
illustrative Russian sentences and short passages into English. This phase of a scientific Russian course is ideally suited for programmed self-instruction, especially the computer-aided type.

The second semester is devoted entirely to the development of the reading skill and to vocabulary building. Preferably reading materials should be tailored to the particular fields of each student, and most available readers offer sufficient materials to make this tailoring possible. Since good results can be obtained in such a short time, and since Russian is second only to English as the language of scientific literature, it is a pity that so few Americans are taking the trouble to learn it.

In the past several years a number of reading textbooks for Russian have appeared which differ significantly from the traditional scientific Russian textbooks in that they are aimed at specialists in a single discipline. One such textbook, S. H. Gould's *Russian for Mathematicians*, is worthy of special mention. Gould's textbook is based on his observation that the bulk of special mathematical vocabulary in Russian consists of transparent borrowings from Western languages and of native words constructed from a small number of roots (less than 100) and an even smaller number of prefixes and suffixes. Thus after a brief but adequate introduction to the Russian grammar, the bulk of the textbook is devoted to the mastery of these roots, prefixes and suffixes. Although his sample sentences and readings passages are taken from mathematical literature, Gould's textbook could be used by any scientist, whether in a classroom situation or for self-study purposes.

Until recently there has been little reason for offering career-oriented special courses in Russian. There appeared in 1971 an English
translation of an East German textbook entitled *Business Russian*, but apparently little notice has been taken of it. In fact, it has yet to be reviewed in this country's leading Russian studies journals. To my knowledge the first published report of a business Russian course appeared in 1974. The course described in this report consisted of reading and translating articles from business periodicals, pamphlets and newspapers, as well as students' compositions on the model of the material read. The purpose was to familiarize students with the vocabulary and style of Russian used in business.

During the summers of 1975 and 1976 seminar-workshops were held at Bryn Mawr College on "Russian for Non-Academic Uses and the Academic Curriculum." Proceedings of these seminar-workshops have been published under the editorship of Ruth Pearce, organizer of the seminar-workshop.

It is my impression, based on informal conversations rather than a formal survey, that "Russian for Business" is becoming a regular course in a growing number of Russian departments, with *Business Russian* frequently serving as the textbook. This textbook, written in contemporary style and using commercial jargon, is organized along the principles of an ordinary business transaction: letter, inquiry, response to inquiry, offer, order, contract, delivery, shipments, payment, complaints concerning quality, delivery, etc. The textbook requires a knowledge of Russian equivalent to the intermediate level, but it would be even more successful at the advanced level. There are ample exercises with a key to the exercises appended for those who wish to use it on self-study basis. Each lesson contains the special vocabulary needed for the exercises in it. Unfortunately the special 3000-
word lexicon prepared to accompany the textbook was not translated and is available in German only.

Even before the advent of business Russian courses there existed in several Russian language departments career-oriented courses in translating and/or interpreting Russian. By and large such courses have not been offered by the larger departments preparing graduate students, nor has there been much of a demand for them until the recent shortages of academic openings for graduate students. In response to this new situation, such courses are now being added by a growing number of departments, and several schools have been publicizing graduate programs (MA) in interpreting/translating.

There is a long tradition in the Soviet Union of teaching Russian to non-Russian minorities in the Soviet Union. Judging by the literature, these efforts have not been completely successful. As the Soviets made their bid for influence among the newly independent Third World nations in the post-WW II years, they began to accept large numbers of students from these nations into their institutes and universities. These students almost without exception came with a minimum knowledge of Russian, or none at all. The Soviets undertook a massive program of preparatory training in Russian using the same methods and materials they were using with their own non-Russian minorities, with predictably poor results. While with their own citizens the long period of Russian language training tended to overcome the deficiencies of the method, in the case of the foreign students good results had to be obtained quickly. Thus in the late 1950s and early 1960s we see a veritable flood of articles describing the deficiencies of the existing programs and recommending methods for improvement. This pedagogical
activity resulted in the founding of an annual publication of a collection of methodological articles under the title *Russian Language for Foreign Students*\(^\text{14}\), followed by two important volumes of programmatic and analytical articles in 1964 and 1965 under the title *Aids for Teachers of Russian as a Foreign Language*,\(^\text{15}\) and also in 1965 of a collection of methodological articles and a comprehensive bibliography under the title *Teaching Russian to Foreign Students*.\(^\text{16}\) At about the same time a number of special textbooks were issued embodying the new methodology.

The general plan called for putting the students through an intensive introductory four-skills course in the preparatory school, followed by special register courses in institutes and universities simultaneously with students' regular subject courses. The special register aspect of courses at first amounted to randomly selected reading passages from the several disciplines. Eventually they evolved a method of compiling special vocabulary lists based on word-count analyses of subject-area textbooks used in the courses which the foreign students were taking.\(^\text{17}\) This was then expanded to compiling lists of phrases and grammatical constructs frequently encountered in scientific texts.\(^\text{18}\) A new generation of special register Russian language textbooks was then produced based on these lists.

One of the better examples of a "minimum vocabulary" list was compiled by the Russian language staff of the Kuibyshev Civil Engineering Institute in Moscow. This monolingual list is intended for teacher's use in preparing their classroom presentations and drills (it is recommended that fifteen new words be introduced in every two-hour class session). It contains some 200 root morphemes and some 600
words and phrases. The list is divided into two parts. Part one contains some 300 main entries with which are nested derived words and key combining words. These 300 entries consist mainly of words for building processes and methods, types of buildings, construction machines and materials, parts of buildings and machines, etc. In the second part of the list selected entries are briefly defined and used in illustrative sentences. Various teaching aids, such as films, filmstrips and reading passages, were then produced based on this vocabulary list.

A major event was the publication in 1967 of *Methods for Teaching Russian Language to Foreigners*, edited by Academician S. G. Barkhudarov. This work, which is an attempt by the leading Soviet methodologists to present a synthesis of theories and practices evolved over the preceding two decades, is still considered the cornerstone of Soviet methodology for teaching Russian to foreigners. According to the introductory piece, the method is founded on the following principles:

1) The method for teaching Russian to foreigners, like all other methods, is an applied discipline based on the insights and generalizations provided by many disciplines, primarily theoretical linguistics and psychology.

2) Foreign language teaching methods must take into consideration the circumstances under which the learning takes place, e.g. length of time available, age of students, environment, purpose for learning, etc.

3) Teaching a given language as a foreign language is substantially different from teaching it as the native language.
4) Selection of methods and materials for teaching Russian to foreigners must take into consideration the structural peculiarities of both the Russian language and the students' native languages.

5) Teaching of Russian to foreigners must aim at the acquisition of cognitive control of linguistic facts and at the same time at practical skills necessary for active communication. The latter can be greatly facilitated by taking into consideration the specific needs of students in different disciplines. Both of these aspects, the cognitive and the practical, are considered equally important. In fact, the method is called the "cognitive-practical" method.

In keeping with these principles, *Methods for Teaching Russian to Foreigners* is divided into three main sections: 1) "Linguistic foundations of the method for teaching Russian to foreigners" (nine articles on phonetics, inflection, word formation, word order, etc. and suggestions for teaching the same, 2) "Basic types of instruction in teaching Russian to foreigners" (three articles on stages and methods of learning, use of technological aids, etc.); 3) "The factor of student's major fields of study in teaching Russian to foreigners" (two articles discussing some grammatical and lexical peculiarities of the language of scientific literature in general and specific fields in particular, and suggestions for incorporating these in teaching methods and materials).

Another major event was the publication in 1974 of the textbook *Russian Language for Foreign Students* whose chief author is V. G. Kostomarov, director of the Pushkin Institute of Russian Language of Moscow State University. This 440-page lavishly illustrated textbook, intended for students who already completed the initial phase of Rus-
sian language study\textsuperscript{22}, incorporates the latest Soviet thinking on for-
eign language methodology (the so-called cognitive-practical method),
especially concerning the incorporation throughout the textbook of
cultural information about the Soviet Union and its people.\textsuperscript{23} Each
lesson consists of the following parts (in this order):

1) Dialog on some theme from everyday life, or a reading passage
on what we would call "social studies" themes.

2) Exercises incorporating new words and grammatical constructs
contained in the dialog or passage.

3) Another reading passage on some aspect of geography, economy,
history, etc. of the Soviet Union.

4) Exercises of various types (questions about the contents of
the passages, fill-in exercises, pattern drills, etc.)

5) Discussion (in Russian) of the structural points contained
in the lesson relying primarily on tables, diagrams and sample sen-
tences.

The final portion of the textbook contains a number of extremely
useful appendices: grammatical rules and tables which the student is
expected to have mastered in previous study, vocabulary list of some
830 words the student is expected already to know, grammatical tables
of new material covered in this textbook, vocabulary list of 1206 words
introduced in this textbook, and a lesson by lesson listing of the new
vocabulary, further subdivided by parts of speech.

Presumably it is after the completion of this four-skills text-
book that the students would continue with special register textbooks
and readers. Among the most successful of these has been the Russian
Language Textbook for Medical Students and Engineers prepared by the
staff of the Patrice Lumumba University in Moscow. One of the lessons in this textbook consists of a reading passage on oxygen. The linguistic and informational levels of the passage are deliberately elementary. There then follows nine pages of exercises and lists of words and phrases to remember. The lesson ends with another reading passage incorporating the vocabulary and constructs drilled. The following lesson begins with a reading passage on the discovery of oxygen, followed by more expressions to remember and exercises designed to accomplish this goal. The types of exercises used include fill-in-the-blank, change words in parenthesis from nominative to required case, transforming sentences with finite verbs to ones with verbal nouns, paraphrase, etc. It is interesting to compare this textbook with one prepared for the same type of students four years earlier in which the only lesson even remotely connected with medicine was a visit to a clinic.

A comparison of the evolution of Soviet methodology for teaching Russian as a second language with the methodology for teaching English as a second language in this country over the past two decades might prove interesting. The two methodologies apparently developed quite independently of each other if we can judge by the paucity of citations in the literature I examined of work produced in this country. Nor did I find many Russian-English contrastive studies. There is, of course, a substantial body of pedagogical literature for teaching English to speakers of Russian which includes contrastive studies, minimum vocabulary lists, special course textbooks, etc. A survey of that literature was, however, beyond the scope of this paper. Although a substantial portion of Soviet methodological literature deals with teaching
Russian to speakers of specific languages, and although many of their foreign students probably knew English quite well, the Soviets apparently chose to ignore this fact for obvious ideological reasons. In closing it is worth noting that virtually all the methological literature, as well as special register textbooks and readers for teaching Russian to foreigners, were produced by women.

FOOTNOTES


7. See my review article in Studies in Language Learning, 1, no. 1 (1975), 205-09.


11. Proceedings can be obtained from the Russian Department, Bryn Mawr College, Bryn Mawr, Pa. 19010.


14. Russkii iazyk dlia studentov-inostrantsev, 1- (1961-). Since this time the Soviets have consistently distinguished between inostrantsy "foreigners" and nerusskie "non-Russians," the latter being reserved for the non-Russian national groups in the Soviet Union. These two types of Russian language teaching activities seem to be carried on quite independently of each other.


17. Excellent discussions on preparing materials for special register courses, including "minimum" vocabulary lists, can be found in Russkii iazyk dlia studentov-inostrantsev, 3 (1969). See especially the article by Iu. A. Ligacheva. See also articles by Balueva, et al., by Rogova, and by Megis and Polukhina in V Pomoshch'... (1964) (footnote 15 above).

18. For a sample of this type of analysis see Ts. Ia. Galetskaia and E. G. Burtseva, "K voprosu ob otnositel'noi chastotnosti sintakticheskikh struktur v obchestvenno-politicheskom stile rechi" (Concerning the relative frequency of syntactic structures in the socio-political style of speech), Russkii iazyk dlia studentov-inostrantsev, 11 (1971), 39-50.


20. According to Metodika, Part 1, the introductory pamphlet to a correspondence course on methods for teaching Russian to foreigners issued by the Pushkin Russian Language Institute in 1975, p. 24.

22. The textbook specifically establishes in one of its appendices what the students are expected to know in terms of grammar and vocabulary.


24. S. P. Balueva, et al., Posobie po russkomu iazyku dlia studentov-medikov i inzhenerov, Part 1 (Moscow: Patrice Lumumba University, 1964). But even this textbook contains reading passages whose relevance to the training of medical students and engineers can only be established by considerably stretching our imagination, e.g. "The Mystery of the Camel." The only reasonable explanation would seem to be that the authors made a deliberate effort to entertain the students in the language lessons, leaving the technical training to the other classes.
LEARNING TO READ GERMAN: A SEARCH FOR RELEVANT MODELS

KARL J. FINK

ABSTRACT

Four methodologies which have gained widespread adherence in American foreign language education in the twentieth century include formalism, behaviorism, systematics, and socialization. These methodologies and their assumptions about language and learning are current in most foreign language programs, but they have greatly interfered in the improvement of reading instruction. This paper discusses one approach to the development of reading skills in German which distinguishes principles requisite for decoding a foreign language from those necessary for generating or producing a foreign language. Some of the characteristics of this method are: a German/English grammar which focuses on expectancies of a native English speaker learning to read and displays structural differences of the two languages and German word and root formation processes, rules for semantic and syntactic prediction, and principles of language redundancy.

Studies in Language Learning
Volume II, Number I, Fall 1977
KARL J. FINK is a Visiting Assistant Professor in the Department of Foreign Languages and Literatures at Southern Illinois University.
1.0 INTRODUCTION

German language instruction for special purposes has a tradition in America as old as the country itself (Zeydel 1961, Kelly 1969, Schmidt 1970). Instruction seems to have varied with the migration patterns of Germans to America; roughly around 1700, 1848, 1870, and 1890. The "Golden Age" of German bi-lingualism and bi-culturalism in America (Buchanan and MacPhee 1928:207-221, Pochmann 1953) encompassed only twenty years, from about 1890-1910. During these same twenty years the basic patterns of American higher education were formed, with some based on the so-called "German model" (Veysey 1965:125-133), and it is not surprising that this period also found peak numbers of Americans studying in German institutions of higher education (Shumway 1910, Eggers and Palzer 1975). During the two World Wars German language education in America maintained a low profile, but belief in German scientific and educational achievements remained strong. In fact, belief in the German achievement was given new impetus during the second World War when "German Area Studies" and "Scientific German" became popular (Matthews 1947:xi, 165-176). During the "Cold War" era, the launching of Sputnik in 1957 and the legislation of NDEA funds in 1958 seemed to trigger a renaissance in foreign language study. This rebirth continued, however, only for those languages which were supported by bilingual legislation. German bilingualism had gone underground during the world-wars period, and despite interest in specialized fields, German language instruction in the 1970's is faced with no immigrant support and emerges with no clear socio-political conception of purpose.
Although the current economic strength of both the East and West Germanies has made "Business German" popular in some curriculums, a strong German bilingualism in America can hardly exist based on service courses. We might surmise, therefore, that one of the more urgent areas of research for the promotion of German language instruction in America today lies in the question of language maintenance (Fishman 1968:585-672, Kloss 1974:7-78), and German language loyalty in America (Kloss 1977:206-252, Ross 1967:219-228, Gilbert 1971, Wierlacher 1976:103-208).

These socio-political accounts survey only the external factors monitoring language education; from immigrant control to today's professional language organizations. The changing patterns of foreign language education have also been subject to developments in intellectual history and many basic premises have been modelled upon theories of language and learning found in the social sciences. It seems equally urgent in this period of low enrollments to re-examine the premises of language skills instruction. There have been several excellent surveys of research on skills instruction (Carroll 1963; Birkmaier 1973), yet none of these studies have surveyed the historical basis for many of the assumptions current in such instruction. These assumptions have substantially interfered with the improvement of foreign language reading instruction and we might begin this study with a review of the premises underlying four methodologies which have gained widespread adherence during the twentieth century, and with an examination of their relevance for the teaching of reading German.

2.0 FOREIGN LANGUAGE LEARNING MODELS

At various intervals the foreign language profession has declared reading the "chief aim" of language instruction (Buchanan and McPhee 1928:
97, 106, 114-116, 137, 171; Newmark 1948:214ff.) and indeed, literature on the topic is overwhelming. The ERIC system has indexed nearly 4000 documents on the topic of reading since 1950, there have been two major efforts in the 1970's to survey reading in foreign languages (Jarvis 1970, King et. al. 1975), and there is yet additional work on the specific reading problems of individual languages. Unfortunately the surveys on reading German (Lohnes 1970, Seymour 1970) do not review research from the period prior to the audio-lingual approach when there was greater emphasis on reading. Nor is there any attempt to coordinate efforts with those in the Germanies on the question of "Fachsprache" (Barth 1971) which is fundamental to problems in reading. While current literature from abroad is often inaccessible, the literature prior to 1945 is often labelled antiquated.

Despite the vast material on the topic, it must be emphasized that we know very little about the actual process of learning to read a foreign language and that useful information for a methodology ranges from the philosophical problems of perception (Merleau-Ponty 1964) to the study of human behavior (Berelson and Steiner 1967). A good deal of this literature is essentially a search for universals which discovers only the divergences in individuals and cultures. Much of the learning theory applicable to teaching reading is based on research with children, where historical variables are reduced to a minimum. We might ask then, how much more complicated is the situation when trying to teach an adult learner to read German? Here we are dealing with eighteen years of historical variables and diversities from two major cultures.

There is a positive note in the recent studies on a methodology for the individualization of classroom language instruction (Strasheim 1970, Logan 1970, Gougher 1971, Phillips 1974, and Hosenfeld 1975), but the proposed
methodologies usually retain a belief in algorithms, linear learning, and lock-step procedures. Such methods are anything but individualized learning and are usually based on assumptions about language and learning that have been organized by the social sciences. The methodological models which seem to interfere most with learning to read German include 1) formalism, 2) behaviorism, 3) socialization, and 4) systematics.

2.1 Formalism

In our scientific age there is perhaps no more dominant assumption made about language than that it is organized and that its analysis may be of use in skills such as reading. The field of linguistics seems to harbor a Kantian notion about the world—that language is an expression of logical thoughts which are innate to the human being. Scientific strategies for learning languages have existed since the turn of the century (Franke 1883, Jespersen 1904) and attempts to formulate a "science" of language learning were popular in research until about 1930 (Buchanan and MacPhee 1928:91-206). In the 1950's the "scientific approach" to language learning was continued under the new terminology of structuralism (Bloomfield 1933, 1961) from which come many of our current language learning concepts like pattern drill, dialogs, syntactic stress, or configurations. In the 1960's the transformational-generative grammar (Chomsky 1968) became a widely accepted linguistic model with a new set of terminology and a more intense formalism and abstraction. It is uncertain at this time whether transformational grammar will be a benefit to foreign language instruction, although the opinion of many that there is little correspondence between a "well-formed sentence" and the psychological reality of sentence production and perception has been voiced at least once (Arndt 1975:105). Although there has been a move from purely generative grammar to a generative syntax and
semantics, the direction of this entire linguistic model is toward increased formalism and becomes increasingly useless for a language learning situation. As Bruner points out, "There is, on the face of it, a sharp distinction between the descriptive language of recipes and the descriptive language of things" (1967:80).

Unfortunately, most texts for learning German (Scherer and Wängler 1966, Lohnes and Strothman 1973) are a mixture of various elements from these linguistic models and German language instruction in America has accordingly become more formalistic. In fact, as Heinz Kloss writes, even German FLES programs have been restricted to the teaching of German as an object and it has never become a medium of instruction for other subjects, as has been the case in countries such as the Soviet Union (1971:123). As will be discussed later, much of grammar analysis is unnecessary for developing reading skills, and courses in reading German have been hard hit by formalism. Adherence to linguistic models is at the heart of debates on translating versus reading and, while there are many studies pointing to the error in mixing these two skills (Bagster-Collins 1913, Fehling 1935, Reichert 1948), the most recent survey on reading German (Lohnes 1970:171) suggests pronunciation practice, grammar analysis, pattern drills, and sentence intonation as important steps in a pre-reading phase.

2.2 Behaviorism

The notion that man is a conditioned animal and that his development is basically a matter of stimulus-response situations has been a model for language learning as long as that of formal analysis (Gouin 1892, Jespersen 1904, Buchanan and MacPhee 1928:182, 186). This approach to language learning was intensified in the 1950's when Skinner's neo-behaviorism (1974) was unified with structural linguistics and today forms the basis for much of our
language learning terminology. The problem of this union has been an extremely simplified view of the human being and a misrepresentation of the psychology of learning (Arndt 1976:101). As Berelson and Steiner (1967:3) point out in their "inventory of the state of knowledge in the behavioral sciences", there is a great deal more to human development than many of the Pavlovian stimulus-response activities often used in the language classroom. Parrot-like patterns of human communication, however, remain the mainstay of language learning activities. The problem is further complicated by the fact that a great deal of the research on habit formation has been based on studies of animals and children. In many cases this research is extrapolated for conceptions of the world of the adult learner. It would seem more reasonable to develop a stochastic model of the adult learner whose situation is much complicated by a longer history and exposure to a greater number of environments. These environments could be compared more to the noise and confusion of a cocktail party than to the sterile lab in which language learning takes place. Colin Cherry reminds us that the relationship between a pattern and an individual is complex and "the individual, with his own peculiar experience, should not be too lightly dismissed, as is sometimes the case" (1966:292).

Yet, most discussion on learning to read a foreign language advocates some form of habit formation, be it auditory or oral (Lohnes 1970:171, Reichmann 1962, Bengel 1941). Wilga Rivers even suggests the student memorize dialogues as the first stage in learning to read a foreign language (1968:221). While there is continued debate on the priority of skills in language instruction (Jarvis 1970:80, King et. al., 1975:182), there is no evidence of a correlation between reading comprehension and the other skills. The primacy of language production skills to reading is only a
cherished assumption about language learning in general (Scherer and Wertheimer 1964:180).

2.3 Socialization

Learning German in different social environments and learning the art of game playing has long been an important part of skills instruction. In early writings this model is usually referred to as the Gouin (1892) or, more often, as the Berlitz method. A "total" German environment is the goal of such instruction and the classroom often becomes a sojourn abroad, including hypothetical walks to the train station, visits to Familie Meyer, or tours of the Berlin Wall. An important aspect of this model is that language learning becomes heavily embedded in culture learning material, so that students are in effect learning to imitate the foreign environment. In fact, social behavior modification seems to be the goal of recent literature on teaching culture (Nostrand 1974, Seelye 1975). With a few exceptions (Marchand 1975, Fink 1975, Stein 1975), research on culture learning fails to make a distinction between cognitive (Moore 1961) and subjective culture learning (Triandis 1972). That is, during the hypothetical visit to Familie Meyer, students may not only learn certain forms of German table etiquette, they may also be taught that it is more advantageous not to switch knife and fork between cutting and eating a piece of Wiener schnitzel. Socialization models may take the structure of formal party games such as twenty questions, spelling quizzes, or charades, or they may be the more common games of daily life such as habits and mannerisms in dining, greeting, buying, and traveling. There seems to be considerable variation in the amount and kinds of daily routines which are introduced into the classroom, although most textbooks include exchanges such as "Tag, Claudia: Wie Geht's?—Danke, gut. Und dir?" (Moeller et al. 1976:2) or more
complicated routines such as a business telephone greeting: "Hier Raparaturwerkstatt Müller.---Hier Doktor Braun. Kann ich den Chef sprechen?" (Moeller et. al., 1976:214). Socialization emerges as an important aspect of language learning, although there is little evidence that recent research in game playing (Berne 1964), role playing (Goffman 1959), or the phenomenology of everyday life (Schutz 1962) has had a significant effect on practical classroom techniques for language learning. However, second-language learning environments could be an excellent source for teaching "enactive representation" (Bruner 1967:12-20) which includes goal-directed action as part of the individual's total perception. Simple stimulus-response problems could then be linked to a more meaningful and more integrated perception of the target language and culture.

Socialization models seem to have a very limited value for learning to read German, although the literature on reading German will occasionally suggest such an approach (Reichmann 1962). Instead, these models seem to be more important for courses in German culture (Hill 1969, Smith 1971), where reading is often made an important part of classroom work. It must be emphasized, however, that neither the isolated, simple stimulus-response patterns nor the integrated game-playing routines are necessary for learning to read German.

2.4 Systematics

While linguistic, psychological, and social models for language learning have been with us since about 1900, techniques based on intelligence systems did not receive serious attention until around 1950. Common intelligence systems of today (Bertalanffy 1968, Wiener 1950, Beer 1972) are actually attempts at holistic conceptions of man and they assume a degree of isomorphism between human organisms and electronic systems. Early forms of
language learning techniques based on this conception may be found in the literature on programmed learning (Razik 1971, 1974; Allen 1973; Morton 1970), whose sophistication seems to have developed in levels pari passu with technology-aided instruction. This development includes use of the gramophone, wire recorder, tape recorder, language lab, and finally, today's PLATO system. The trend has been to build more flexibility into the technology (hardware) and subject matter (software) of the learning system and in that way better approximate the learning mechanisms of the human being. The PLATO system represents a milestone in this development and since it is a visual rather than oral/aural system, it has great potential for skills instruction in reading German.

Techniques for increasing the rate of reading comprehension and at the same time individualizing instruction are certainly two of the major benefits of computer-aided instruction. However, vocabulary management seems to be the most active area of both computer-aided learning and research. In the past there has been a great deal of advice on vocabulary management (Buchanan and MacPhee 1928:265-75; Rudowski 1970:192-94), while actual methods of controlled vocabulary have improved only in the last decade. Computer-generated vocabulary guides assist in the complex task of vocabulary management by identifying, counting, and parsing text words, by comparing lists or texts at any level of identification, by merging counts and lists, by ordering words according to frequency, alphabet, morphemes, or subjects, and finally by retrieving words within their context (Kanocz and Wolff 1971). All of these techniques are an aid to introducing and controlling vocabulary in the preparation of classroom reading materials.

However, new materials have not changed old methods of classroom instruction. There is no evidence that dictionary thumbing, deciphering and
translating, oral/aural prerequisites, and grammar analysis cease
to interfere in learning to read German. The recent development of vocab-
ulary control devices are primarily an aid to more advanced stages of read-
ing which involve research questions such as concept formation.

The question at hand is how to teach the reading of German for content, ideas, and concepts with maximum speed and comprehension. It was a problem central to programs in area studies (Matthews 1947) and is currently a problem in developing interdisciplinary programs (Kelly 1974) where one of the goals of the class is to consume large amounts of reading material. The following methodology and description is based on a course in reading German which was prepared by Professor James W. Marchand and which has been used at several institutions including the University of Illinois. The materials and method have been tried with a great deal of success and the Educational Testing Service has based its exams on the methodology of the course (Marchand 1958).

3.0 THE MARCHAND READING METHOD

In the most recent major survey of problems and methods in the teaching of German instruction, Reichmann (1970) subdivides the discussion of reading as follows: "Pre-reading Instruction," "Reading," "Vocabulary," "Scientific German," and "Reading for Graduate Students." Only in the latter section does there seem to be a willingness to separate reading problems from other models of language instruction. The course outlined here does not view these areas as special programs in German but rather as a single problem in teaching an adult learner to read. The lack of successful reading programs and the general dissatisfaction of students with their own progress is due to the narrow adherence to one or the other models of language learning. This in itself is a problem in the sociology of the profession and before success can be attained with the present course, some preliminary philosophical examination of reading German is necessary.
3.1 A Willing Suspension of Disbelief

The primary innovation in the methodology of the course is the minimization of formalism with a focus on teaching an English-speaking student to read German. Both require a "willing suspension of disbelief" of the student and the teacher. The student must suspend popular notions about the difficulty of German language and about his ignorance of the reading material. The average student in fact brings a great deal of knowledge to the classroom, including English, a Germanic based language, and eighteen or more years of formal and informal learning in a modern, technologically advanced society. That is, English-speaking students of American decent bring a broad base to the college classroom and the reading course outlined here seeks to capitalize on the student's native language and native intelligence for the purpose of reading German. The teacher, on the other hand, must suspend personal and cherished methods for teaching German such as dialogue memorization, phonetic analysis, charts of adjective endings, strong verb drill, as well as all the other activities associated with the generative skills (speaking and writing) of language learning. Teachers must in addition suspend traditional notions about the role of formalism, behaviorism, socialization, and systematics in methods of reading German.

Pre-requisite principles for teaching the German reading course outlined here, then, include: 1) focus on the evaluative skills, 2) use of a German/English reading grammar, and 3) emphasis on reading, versus translating, skills. Suspension of student and teacher disbelief are greatly aided by two additional principles of learning to read German: syntactic and semantic prediction and language redundancy (Marchand 1956). A brief elaboration and some examples of each of these principles will give some impression of the context of the grammar, drill, and reading sections of the course materials.
3.2 Evaluative versus Generative Skills

The methodology of the course assumes from the outset that the skills for learning to read are evaluative and all activities related to generating German may be eliminated. These include the more obvious activities such as pronunciation practice, memorization of genders or noun plurals or the second person singular, and plural inflected verb forms. Many structural elements such as questions and imperatives are marked with punctuation and even the parenthetical structures such as the relative clause are marked off with commas and are introduced by a limited number of possibilities such as, preposition + der-word (welch). When the student focuses on evaluating German rather than producing it, he is able to eliminate many minor problems which are usually found in beginning texts; problems such as when to use the "ess-tset" (ß) as opposed to the single "s", or vowel contrast drills such as bieten versus bitten, an oral rather than visual problem of German. As previously stated, there is no evidence for the assumption of a correlation between oral/aural functions and reading skills. There is another important reason for separating reading skills from the others. From the standpoint of communication theory it has been established that languages are highly redundant and will offer a reader (and listener) multiple cues, not only for content but also for syntax. Adjective endings are a case in point, in that other aspects of the noun phrase will usually reveal their function in a sentence. While the course eliminates a great many unnecessary generative learning activities, further research to discover additional factors of redundancy would simplify and focus the reading of German.

3.3 German/English Reading Grammar

A "reading grammar" for English speaking students has been established
for the course so that formal language analysis serves only as a tool in learning to read German. The student is informed of comparative English/German structures which are recognizable from his native language and secondly, he is presented with only those aspects of grammar needed for reading German. The student will recognize, for example, the German noun phrase without any difficulty since it has approximately the same structure as the English noun phrase, with the exception of the possessive which follows the head noun in German, i.e. das Buch des Mannes (the man's book). Other comparative aspects include structural cognates such as the list of German/English pronouns, and a theory of cognates shows students words etymologically related in both form and meaning (Arm-arm), different in form but similar in meaning (Distel-thistle), and different in meaning and in form (Zaun-town). The essentials of grammar for reading German are organized into summaries for the student, such as the fourteen most common "sentence openers" which all mean "He said that." Other essentials are presented as alphabetized lists such as the two part verb structures where the reader must reserve judgement until both parts are encountered. Perhaps most important among such lists are the "German connectives" which are ranked for the student in terms of sentence function and frequency. Many of the "conjunctive connectives" such as sondern and weder...noch or the "temporal connectives" such as sobald or nachdem rank within the first 1000 words of the German language. These must be learned. Also included in the taxonomy of connectives are "causal connectives" such as so daß, trotzdem, or infolgedessen which are important not because of their high frequency but because they are essential for prediction of logical thought patterns. Thus, by focusing on a comparative English/German reading grammar the formal aspects of the course
are reduced to a minimum and can easily be mastered in a single semester. Since the course methodology requires that these essentials be introduced only in the context of a reading passage, there is no loss of time in reading practice.

3.4 Reading versus Translating

The distinction between reading and translating is perhaps of even greater importance for focus on reading German. While attention to generative skills is maybe no more than an unnecessary distraction, translating skills are usually the preoccupation of teacher and student in most reading courses. Speed and comprehension are the primary goals of reading, but translating German into correct English sentences becomes an obstacle which leads to most of the failures of reading programs. Even the best translator can translate only about 2,000 words an hour and when using translating skills to learn to read, an average student will be able to read only about 500-800 words an hour (Marchand 1958). Besides formal language analysis, there are various translating techniques which involve the student in excess motion, such as eye jumps to search for the German verb at the end of the clauses. Marchand's course materials (Grammar III) show the student that English too, has many verbal complements such as "We shall take the matter under advisement," or "We will take all of these possibilities into consideration." The English reader does not find it necessary to bounce back and forth across the sentence for comprehension and the methodology of the present course eliminates this practice by teaching students to read naturally, from left to right through the entire sentence without stopping. Reading German straight through is essential to reading German with any degree of speed. In cases where there are no equivalent English structures, the student's native language experience is
of no help and he is faced with a completely foreign form of syntax. In the
case of the "extended adjective phrase," for example, the student is simply
permitted "straight reading" with improper English. That is, while English
quickly runs out of examples of phrases such as "the well-hit ball" (Der
gut geschlagene Ball) or "the running man" (der laufende Mann), such long
attribute constructions are very common in German. For purposes of speed,
but without loss of comprehension, students are encouraged to say "the by
him and his younger brother built house" (das von ihm und seinem jüngeren
Bruder gebaute Haus) during a reading session in the classroom. Such
practice is important so that the student becomes accustomed to straight
reading when reading silently during homework assignments.

The benefits of reading as opposed to translating are obvious. The
student is never asked to Anglicise the German language and one may even
conjecture that reading German sentences straight through in English would
be a good pre-requisite for learning the German syntax for generative
skills. The primary benefit of straight reading is that students are
encouraged at an early stage to recognize "chunks" of the German language.
They learn to do "lump reading", i.e. reading the entire structures without a pause. This enhances recognition of longer structures and increases
reading speed. We know that the eye of a reader only subtends an angle
of one degree, covering only a small portion of the entire page (Cherry
1971:290). Since only an unusual sentence covers more than several
lines of a page, the reading of whole sentences is a task which can be
accomplished very early in the student's training. Straight reading can
then lead to an increase in speed, which will vary only with factors such
as the student's prior experience in the subject area or the rate of
vocabulary control.
3.5 Language Prediction

A final point of preliminary philosophy for the reading of German will include a few comments on methods of prediction. Throughout the history of teaching reading German there have been notions about "guessing," "inference," and "anticipation" of vocabulary and syntax (Seibert 1945, Taylor 1953, Marchand 1955, Jarvis 1970:103, King et. al., 1975:202). Recent literature on cloze test measures (Edwards 1973; Prange 1973) support earlier notions that students can predict both syntactic and semantic aspects of the sentence with a high degree of accuracy. In the present course, techniques of prediction have been fully integrated into analysis of the German language and into classroom methodology.

In syntactic prediction students can, for example, review a list of two-part verbs and learn to anticipate the complements. Students learn that two-place verbs are becoming more frequent in German and in English, and since no dictionary can list them all, it is important to know the mechanism of the verbal complement as a means of prediction. Two-place verbs function like separable prefixes: "The man took (off) his hat off" (Der Mann nahm seinen Hut ab). The grammar section of the present course lists a number of the more common verbs which take a variety of complements, such as "geraten," "nehmen," and bringen," i.e. "Einstein's Relativitätstheorie brachte die ganze moderne Physik in Erregung" (Einstein's theory of relativity brought (into excitement) all modern physics into excitement). Thus, with an understanding of two-place verbs a student can predict the syntax of the sentence. For classes in reading German it is useful to predict a description of the verb from the weak preterite form (Marchand 1955) rather than from the infinitive, as is the case in most language courses. The student predicting from the preterite weak
forms encounters about 75 percent of the German verbs, thus the trend of analogy is from the rule to the exception rather than the reverse. In most language classes the difficult and exceptional strong verbs are learned first (Sharp 1936), Reichmann 1962), and the student becomes conditioned to form analogies based on low frequency verbs. The trend of analogy, it seems, must be chosen by the special purpose of the language course and, in the case of passive recognition, student success is much greater when he begins with the common weak preterite forms of the verb.

Semantic prediction, or guessing the meaning of an unfamiliar word or phrase, has always been advocated in reading courses. Yet, there is very little sound language analysis or specific guidelines for such achievement. It is usually suggested that semantic prediction can be achieved on the basis of some logical reference based on knowledge of antonyms, synonyms, appositives, or possible cause-effect relationships in a particular sentence. These suggestions are vague and insure no systematic approach. In reality they amount to prediction based on the student's prior knowledge in the subject area. In this event, graded reading techniques and controlled vocabulary better insure prediction. The semantic predictions suggested in the present course are based on language analysis and will be discussed next in the section dealing with German word formation. As we shall see, word formation leads to semantic prediction and is central to both comprehension and speed of reading German.

3.6 Language Analysis

Most discussions of language organize some linguistic items into processes and others into arrangements. The grammar sections for the present course include both of these dynamic and static elements of
language analysis. For purposes of reading German it is important that both aspects be explained to students and that a language learning methodology be developed which is tailored for reading. Many of the items which can be shown in arrangement have already been discussed; such as verbal complements, possessive nouns, and extended adjective phrases. The following model illustrates the various possible elements which might constitute a German declarative clause:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>noun</td>
<td>any</td>
<td>fin-pers.</td>
<td>pers.</td>
<td>1 word</td>
<td>noun</td>
<td>noun</td>
<td></td>
</tr>
<tr>
<td>ele-</td>
<td>ele-</td>
<td>ite</td>
<td>pron.</td>
<td>pron.</td>
<td>adv. of</td>
<td>pron.</td>
<td>pron.</td>
</tr>
<tr>
<td>ment</td>
<td>verb</td>
<td>subj.</td>
<td>obj.</td>
<td>time</td>
<td>subj.</td>
<td>obj.</td>
<td></td>
</tr>
<tr>
<td>but 3</td>
<td>dir.+</td>
<td>indir.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>or 16</td>
<td>indir.</td>
<td>* dir.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>adv.</td>
<td>neg-</td>
<td>adv. of</td>
<td>adv. of</td>
<td>verb</td>
<td>past</td>
<td>inf.</td>
<td>fin-</td>
</tr>
<tr>
<td>phrase</td>
<td>active</td>
<td>manner</td>
<td>place</td>
<td>comple-</td>
<td>part.</td>
<td>ite</td>
<td>inf.</td>
</tr>
<tr>
<td>of time</td>
<td></td>
<td></td>
<td></td>
<td>ment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This model is useful for pointing out structural contrasts between English and German which can aid the student in processing clauses, e.g. that slots 2 and 14-17 deviate radically from the typical subject, verb, object arrangement in an English declarative clause, or that three verbs (sein, bleiben, and werden) are completed in slot 13 (Er blieb sein ganzes Leben lang 13 Soldat), while the English equivalent would require that slot 13 follow slot 3.

The importance of recognizing items in arrangement cannot be emphasized enough, yet it seems the most significant innovation of the present course is in its presentation of the rules of language change. It is essential that students learn that aspect of the language which is in constant flux, since it is this aspect of the language which the student will not encounter in his reference books. If the formal classroom experience is to become meaningful to later intellectual life, then the student needs to learn the
rules of language development and change. The most useful of these rules involves word formation and root derivation.

3.6 Word Formation

German has fewer lexical items than English, and it relies more heavily on morphological processes for creating new words than does English. Although Latin and Greek loan words are important for changes in German, rules for word formation are fundamental to prediction, comprehension, and speed in reading German. Marchand's material presents a taxonomy of word formation rules on compound nouns (Wortbildungslehre), Latin loan translations (Eindruck), verbal nouns (Schreiben), and morphemic additives (Mehrheit, Undank). In each of these categories students are informed about the rules which govern the generation of nouns and are asked to learn them for purposes of recognition. Compound nouns can often be rendered into English only as phrases or sentences. For purposes of reading, however, it is usually only necessary that a student recognize the component parts of a compound word, i.e. Wort-word, Bildung-formation, Lehre-theory. Latin words are often translated in morphemic units, as Ein-im, Druck-pression. Verbal nouns are described simply as any infinitive which is capitalized and given the neuter gender. The verbal noun is perhaps the most common method of substantivising, and terms like das Schreiben simply mean writing or the process of writing. Other kinds of verbal nouns are formed by adding unc-tion so that leiten (to conduct) becomes Leitung (conductance). Perhaps most useful to the students are the lists of morphemic additives, many of which go through a series of formations. For example, bar may be added to the verb streiten (to quarrel) to form streitbar (quarrelsome) and keit--a suffix of abstraction--is added to form Streitbarkeit (quarrelsomeness). In all there are 53 prefixes and suffixes
listed in the materials for the course and their many serial formations will give students a basic framework for passive vocabulary recognition.

Since word formation is one of the most important aspects of the dynamics of the German language, it is made an integral part of the grammar and classroom methodology. If a student intends on making reading German a serious part of his academic life, he will have to get used to using the rules of word formation. Many of these words will never be found even in the most up-to-date dictionaries and their prediction will become essential to reading German.

3.8 The Root Dictionary

The notion of word groupings or word families as vocabulary aids to language learning has been with us since ancient times. Such groupings have traditionally been organized according to grammar categories such as verbs, adjectives, or nouns, or according to subject matter such as parts of the body, animals, plants, etc. (Pfeffer 1961; Friederich 1969). Groupings according to the root syllable are an important device for word prediction and are at the same time a fundamental aspect of the German language. After memorizing the meanings of the root syllable the student will have a clue to the meaning of the many derivatives. Vocabulary can be increased exponentially when the student learns that *arbeit*, to work, is also the basis of *arbeiten*, *Arbeit*, *Arbeiter*, *Arbeitgeber*, *Arbeitskraft*, *Arbeitsordnung*, *Mitarbeiter*, and *verarbeiten*. The root dictionary is provided in an Appendix and includes 183 root syllables with their lists of derivatives with similar meanings. Root dictionaries then, are not only basic to the rules of word formation, prediction, and reading speed, but are also fundamental to a systematic presentation of the dynamics of the German language.
It should be emphasized that the formal aspects of the reading course are mastered gradually and that they are introduced when they occur in the context of the reading. There are 35 classroom readings as well as a number of home readings which are synchronized in lexical and syntactic difficulty so that the student does not encounter difficulties in his homework which have not previously been treated in the classroom. Since analysis of the theory of material selection would take us afield into questions of the organization of knowledge, it may suffice to state that the content, ideas, and concepts found in the readings represent the basic cognitive areas which a student encounters in most undergraduate Liberal Arts and Science curriculums. It must also be emphasized that these materials, along with various vocabulary control drills and texts, have been put on the PLATO. Here reading speed is closely monitored so that the lines per minute are varied with the students increased experience in lexical and syntactic patterns of German.

4.0 Conclusion

While the foreign language reading process is a complicated task about which a great deal is yet to be learned, we must also recognize that our cherished models of language learning have interfered in that process. There is no single best method for special language learning tasks, and many current methods are useless for specialized objectives such as learning to read. Because the course methodology outlined here uses the students' native language ability and experience, it can be applied to any language reading program including the so-called "dead languages" where it would be useless to learn the generative skills. Such an approach to language learning seems even more viable when we consider the fact that very few students ever come into contact with a "living language," be it
modern German or Old Norse, for the generative skills begin and end with the classroom experience for a majority of American students.

REFERENCES


Bengel, Lienhard. 1941. The place of speaking and writing in reading courses. German Quarterly 14 32-37.


Marchand, James V. 1955. The use of prediction in teaching the German verb. Language Learning. 5. 138-144.


Reichmann, Eberhard. 1962. An active approach to second year reading. German Quarterly. 35. 79-84.


THE COMPREHENSION OF ENGLISH FOR SCIENCE AND TECHNOLOGY ARGUMENTS AND DEFINITIONS

JOHN E. LACKSTROM

ABSTRACT

Introductory science textbooks in English confront the language learner with different rhetorical forms intended to convey similar kinds of information. Because reading instruction has until recently concentrated on deciphering vocabulary and on sentence comprehension, students are unable to understand such science texts even though they may be able to comprehend the meaning of all the sentences contained therein. This paper demonstrates that the learner's failure to comprehend results from his inability to recognize the elliptical character of the rhetorical organization of introductory science textbook material. A teaching strategy designed to deal with this problem is proposed. Finally, it is suggested that much of the English for science and technology vocabulary presentation can be subsumed under rhetorical instruction, thereby making learners more effective and self-sufficient students of their chosen technical disciplines.
JOHN E. LACKSTROM is an Associate Professor of Linguistics and English as a Second Language at Utah State University.
Undergraduate students studying in EST are confronted in their introductory science textbooks with a variety of rhetorical forms intending to convey a similar variety of information. There are, among others, specialized rhetorics of definition, classification and argumentation. Until recently, little attention has been given to the precise role the organization of such rhetorical forms plays in the comprehension of written EST by the reader. Instructional texts in reading comprehension directed toward the learner of EST, whose native tongue is not English, have emphasized to a great extent specialized vocabulary development and sentence comprehension. While these foci are certainly crucial to competence in general English and EST, this paper will attempt to argue that an ability to understand the literal meanings of sentences contained in EST texts cannot be taken to be sufficient to the full comprehension of the information intended to be conveyed by such texts. It will be shown that the insufficiency is a consequence of the elliptical character of introductory science textbook material. As a consequence, the student of EST must possess, obtain, develop or be taught reading comprehension skills which go beyond the interpretation of vocabulary and sentences. These skills, it will be argued, are precisely those skills which are required for the interpretation of ordinary conversational English. Finally, it will be suggested that much of EST vocabulary presentation, itself, can be subsumed under EST rhetorical instruction, making beginning EST readers more effective and self-sufficient students of their chosen technical disciplines.

*English for Science and Technology for students of English as a Second Language.
A form of discourse commonly found in introductory science textbooks in English is what may be referred to as the EST argument or EST argumentation. An EST argument is a written presentation in an EST textbook which intends to support or invalidate an hypothesis or theory through the presentation of experimental evidence. Such arguments, as found in introductory science textbooks, frequently have an elliptical character which makes their full comprehension unattainable through simple, sentence-interpretive reading comprehension skills. As a result, comprehension skills of a different order need also be brought to bear on the comprehension task.

Let us consider first an example of a non-elliptical argument in EST (Fig. 1). It contains rhetorically five organizational parts. First, the statement of the problem (ln. 1-6). Next the hypothesis or proposed solution (ln. 7-9). Then follows a statement of the consequences of the hypothesis (ln. 9-12). The statement of the consequences serves logically to relate the eventual test and results to a validity judgment about the hypothesis. Next follows the description of the test and statement of the results (ln. 13-20). Finally, the non-elliptical argument reaches a conclusion concerning the validity of the hypothesis (ln. 23-27). The non-elliptical EST argument is really an informal, abbreviated version of an experimental report. The presentation follows an outline very similar to the explicit rhetorical organization of a formal experimental report (Fig. 2).

Presentations that undergraduate students in EST read are rarely as direct and straightforward as the discussion of Torricelli's experiment in Fig. 1. In most cases, severe ellipsis has taken place in the presentation of the argument. The reader must not only recognize the rhetorical
organization, but also fill in gaps in the presentation. Consider the presentation of the Michelson-Morley experiment in Fig. 3. The presentation begins with the statement of the problem. It continues not with a statement of the hypothesis, but with a description of the consequences of an unstated hypothesis, namely that the earth moves through ether. The description of the evidence and the results follow and the argument ends. The conclusion, namely, that the earth does not move through ether is left unstated and must be inferred by the reader.

FIGURE 1

In the seventeenth century, long after the invention of the vacuum pump, a device for raising water from one level to another, it was well-known that such a vacuum pump could not raise water higher than 35 feet. The problem that faced scientists was the question: Why was it impossible to raise water higher with a vacuum pump?

In the seventeenth century, Torricelli hypothesized that the atmosphere had weight and exerted pressure on objects on the earth's surface. He reasoned that if this were true, a liquid such as mercury, which was \( \frac{14}{15} \) times heavier than water, could be raised only 25 feet by what he supposed to be "air pressure."

In order to test his hypothesis, Torricelli took a glass tube somewhat over 30 inches long and closed at one end. He filled the tube with mercury. Then he put his thumb over the open end of the tube. He turned the tube upside down and inserted the open end in a cup of mercury. The liquid in the tube fell until its top was only about 30 inches above the surface of the liquid in the cup. The mercury stayed in the tube because of the pressure of the air on the surface of the mercury in the bowl.

Torricelli concluded that his hypothesis was correct. He explained this by theorizing that the atmosphere of the earth was like a "sea of air" which had weight and therefore exerted pressure on objects on the earth's surface.

FIGURE 2

1. Statement of the problem
2. Statement of the hypothesis
3. The consequences of the hypothesis
4. The evidence/results
5. The conclusion

FIGURE 3

PROBLEM:

Albert Michelson...and...Edward Morley began a series of experiments designed to measure the velocity of the earth as it moved through the allegedly stationary ether.

CONSEQUENCES:

According to the ether theory, the speed of a light pulse is $c$ relative to the ether. If the apparatus is moving with respect to the ether, it can partly catch up with the light pulse...The time for the round trip in this case (when the apparatus is oriented along the direction of motion) is called $t'$.

When the apparatus is at right angles to the direction of motion the light has to follow the triangular path shown (in an accompanying illustration) in order to return to the lamp. The time required to go from the lamp to the mirror and back to the lamp is called $t''$.

The crucial conclusion is that when the earth's velocity is not zero with respect to the presumed ether, $t'$ and $t''$ are necessarily different and, in fact, $t'$ is larger than $t''$.

TEST/RESULTS:

The essence of the experiment is to launch two steady light beams at right angles along distances that are as nearly equal as can be made in practice. The light beams travel up their respective paths, bounce off mirrors, and return to their source. Now if this apparatus is stationed on the earth and is moving through the ether, then the two light beams can't return to the central point simultaneously. This effect can be measured with great accuracy because, ..., the two light beams would
interfere with each other, thereby producing characteristic interference fringes of the type discussed in other chapters. The two arms cannot be made exactly equal in length. Michelson rotated the apparatus between measurements to make first one arm and then the other point along the direction of motion, then he looked for a change in the interference pattern.

However, when the experiment was performed Michelson and Morley found nothing! There was no effect. Michelson and Morley repeated their experiment several times and it has been repeated a number of times in recent years with modern techniques. And neither they nor any other observers have been able to discover the slightest effect of the earth's motion with respect to a hypothetical ether.


What we learn from the EST argument exemplified in the description of the Michelson-Morley experiment is that the task of reading in EST involves considerably more than extracting the meanings from the sentences found in the passage since more information is being conveyed than is being explicitly stated. First, that the issue at which the argument is being directed is the question of whether or not the earth moves through ether (unstated hypothesis). Second, that the evidence shows that the earth does not move through ether (unstated conclusion). And third, that the presentation as a whole constitutes an invalidation of the ether hypothesis (unstated point of the passage).

The pedagogical conclusion to be reached from the EST argument in Fig. 3 is that the teaching of reading comprehension and especially "critical reading" as it is sometimes called, reading which extracts more than the literal meanings from sentences and passages, has to involve more than the teaching of vocabulary and of sentence structure. In an effort to make precise what else needs to be taught, let us first try
to relate the observations made concerning EST arguments to work that has been done in relation to the conversational language, then show that the principles are applicable also to EST and finally offer some pedagogical suggestions for teaching the reading comprehension of EST.

Grice (1968) and Gordon and Lakoff (1975) have discussed the role of what they have called "conversational postulates" in linguistic communication. The concept of the conversational postulate derives from the observation that speakers often use one sentence to convey the meaning of another. Thus one may order or suggest to another that he close a window or door by uttering the sentence, "It's cold in here." In the example, the utterance of a statement carries the speech act potential of a command or suggestion. Gordon and Lakoff attempt to account for such observations by formulating conversational postulates which will predict the circumstances under which certain kinds of utterances will have both literal meanings (a statement about room temperature) and conveyed meanings (a command or a request). The postulates, therefore, can be expressed as conditions under which certain kinds of speech acts can appropriately be performed. These conditions are grouped under the general categories of sincerity, reasonableness and the cooperative principle. The sincerity conditions involve such requirements as: If you request someone to do something, then you must want him to do it. The reasonableness conditions are such requirements as assuming the hearer can perform the request and is willing to perform it.

Gordon and Lakoff also discuss Grice's cooperative principle. The notion behind the cooperative principle is that in contexts in which the speaker wishes to inform his audience, he will provide them with all the information that he assumes to be relevant to their informational needs.
Gordon and Lakoff provide an example of uncooperativeness in this respect:

"...Suppose that at a party all the guests leave early and this upsets the host. If someone asked you what had happened, it would be uncooperative to reply, 'Someone left early,' though strictly speaking it would be true." (Gordon and Lakoff 1975:6)

Now consider a somewhat different example, again from Gordon and Lakoff. Suppose you meet a friend on the street and say to him, "Your wife is faithful." He would most certainly express surprise or anger, the reason being that you had violated the second half of the cooperative principle which is to avoid saying what the audience already knows or takes for granted. Violation of the same principle is the source of the humor in the statement, "I'm John Lackstrom and you're not." The cooperative principle as a conversational postulate predicts that speakers will say no more nor less than what they believe their listeners will require.

John Searle (1975) has argued convincingly that one can get along theoretically without a lot of ad hoc conversational postulates in describing conveyed, but not expressed, meanings. Language users, he insists, don't have a lot of postulates floating around in their heads. What they do possess, he argues, is a certain amount of shared knowledge between the speaker and the hearer, a theory of speech acts by which they know what is necessary to a valid request, proposal, promise, etc., and an agreement on the cooperative principle whereby it is understood that a speaker has a point to uttering sentences, and that he will say no more nor less than what is necessary to get that point across. In addition it is assumed that the hearer can make logical inferences, and so the speaker will often not state that which he assumes the hearer can infer.
Searle illustrates with an example: You say to someone, "Let's go to the movies.," which constitutes a proposal. He replies, "I have to study for exams," which constitutes a rejection. The question Searle raises is: Why does that statement constitute a rejection in contrast to some other statement like, "I drive a blue car." The explanation lies first in the assumption of the cooperative principle by both speaker and hearer. Speaker expresses only as much information as he believes hearer requires and hearer assumes what speaker says is relevant to the conversation and the situation in which they find themselves. The cooperative principle being in effect, hearer possesses an intuitive understanding of the conditions on speech acts and, recognizing that a preparatory condition for the acceptance of a proposal is the ability to accept it, concludes that speaker's statement about his exams is an allusion to his ability to accept the proposal. Hearer brings conventional knowledge into play in recognizing that going to the movies and studying for exams are potentially mutually exclusive activities, in contrast to owning a blue car. The hearer finally applies logic to infer that since it would be impossible to both go to the movies and study for exams in the same time period, the speaker must be referring to his inability to go to the movies and is, by doing so rejecting the proposal. The hearer thus uses the cooperative principle, his knowledge of the conditions on speech acts, conventional knowledge and logic to arrive at correct interpretations of a speaker's elliptical expressions.

The Searle example is parallel to the elliptical argument illustrated with the Michelson-Morley example in that in both cases more content is intended that stated. The similarity in the cases suggests that EST readers and speakers of conversational language must apply the same kinds
of strategies and knowledge. The EST reader must share with the writer some knowledge (note the reference in Fig. 3 to "interference fringes" discussed in other chapters). Where all language users must have a theory of speech acts, EST readers must know the rhetorical form of an EST argument. The EST reader must also accept the cooperative principle that the EST writer has a point to make and be willing to apply logical inference to seek the point out.

Applying these strategies to the Michelson-Morley example, the critical EST reader will note that the author has not supplied him with an explicit hypothesis. This observation depends on his knowledge of the rhetoric of EST. The reader will say to himself, "There must be some point the author is trying to make." This step entails the acceptance of the cooperative principle. Finally, the reader will deduce from the statement of consequences the intended hypothesis of the author: that the earth moves through ether.

The Michelson-Morley example is extremely typical of the sort of presentation found in introductory science texts of EST argumentation, though it must be observed that the example typifies introductory textbook material only, not formal, technical reports. If one compares material found in introductory textbooks (the primary reading of undergraduates) with the material found in formal technical reports (the primary reading of established technicians and graduates in a discipline), one finds advanced technical reports specifying rhetorical form with section headings and presupposing a good deal of content, while introductory texts leave inexplicit the rhetorical form specifying to a greater extent informational content. What is striking is that the real burden of comprehension is borne by the introductory student, who must not only get
the possibly unfamiliar facts and concepts out of his reading, but must also intuit the direction the author is taking in the discourse.

Having outlined what the EST reader must know and be able to do, we turn to what he must be taught. The first step for the beginning student in EST is to learn the scientific method and its application. Although various versions of the method are available, one which I have found useful is found in Figure 4:

**FIGURE 4**

1. Find a problem
2. Hypothesize a solution
3. Deduce the consequences of the hypothesis
4. Test the hypothesis against its logical consequences
5. Observe the results
6. Reach a conclusion concerning the validity of the hypothesis

One advantage of the scientific method as outlined in Fig. 4 is that it coincides nicely with the outline of the formal scientific report in Fig. 5.

**FIGURE 5**

I. INTRODUCTION
II. THE EXPERIMENT
   A. APPARATUS
   B. PROCEDURES
III. RESULTS
IV. DISCUSSION

The Introduction contains the statement of the problem, the hypothesis and the consequences of the hypothesis. The description of the experiment is the test of the hypothesis against its consequences. Following the statement of the observed results, the Discussion section contains
the conclusions concerning the validity of the hypothesis and any practical or theoretical consequences that follow from its validity. The teacher may wish to have at his disposal a few problems that can be resolved by experimentation in the classroom or laboratory. The students individually or in groups can follow the scientific method to solve the problems and write up the results in abbreviated experimental report form. An example of one such exercise is included as Figure 6.

FIGURE 6
APPLICATION OF THE METHOD

The Problem: The problem that must be solved is this: If you are going to buy new tires for your car, what kind of tires will give you the best traction on a smooth surface—rough-tread tires or smooth-tread tires?

The Hypothesis: Make a hypothesis of the solution to the problem. Write it below:

Consequences of the Hypothesis: If a block of rubber with sides made to simulate rough and smooth tire treads is placed at the top of an inclined plane, the side with the greatest traction will slide down the plane more slowly than the side with the least traction.

The Test: Perform a test of the hypothesis.

The Results: Describe your observations of the results below.

The Conclusion: Reach a conclusion concerning the validity of your hypothesis:

When the students demonstrate an understanding of the scientific method and an acceptable proficiency in writing up brief reports, they are provided with a series of tasks whose objective is to identify the rhetorical parts of an informal prose description. Figure 7 is a matching task to be accomplished after having read an account of Dalton's
validation of the atomic theory. Figure 8 illustrates another sort of task, one in which parts of the brief experimental report are given and others are left for the student to extract from his reading. The tasks are graded in difficulty and eventually involve the student's filling in content conveyed but not explicitly stated, as in Figure 9 where the conclusion must be reached by inference. In completing the task acceptably, the students must state, themselves, the unstated conclusion that centrifugal force plays no role in the theory of subatomic particles. Through activities like those described above, and others, the students are taught to perform and interpret EST arguments in the same fashion in which they will have to perform and interpret EST arguments as student scholars: preparing short experimental reports and taking notes on their textbook reading.

FIGURE 7

MATCHING PROBLEM. On the left you will find the six steps of the scientific method. On the right you will find statements about John Dalton's experiment, but they are not in the correct order to match the steps in the scientific method. In the space to the left of each step in the scientific method write the letter of the statement which expresses that step in the method. Number 6 has been done for you as an example.

___1. Problem A. Materials combine in definite proportions because all matter is made of tiny particles with definite weight.

___2. Hypothesis  

___3. Consequences  

___4. Test  

___5. Results  

F 6. Conclusion  

B. Carbon and sulfur were observed to combine with oxygen in either of two ways in a ration of simple whole numbers.
FIGURE 7 continued:

C. Materials always combined in the same proportions by weight.

D. If matter is made of tiny particles with definite weight, two materials which combine in more than one way always combine in a ratio of simple whole numbers.

E. Carbon and oxygen were combined to form carbon monoxide and carbon dioxide. Sulfur and oxygen were combined to form sulfur dioxide and sulfur trioxide. The materials were weighed before and after combination.

F. The hypothesis is validated.

FIGURE 8

Madame Curie's experiment provided evidence that atoms contain both positive and negative particles. You will find below an outline of her experiment. The problem, hypothesis and deduction of consequences have been given. You complete the outline by describing the test, stating the results and giving the conclusions.

I. PROBLEM. A sample of pure radium quickly becomes contaminated with other elements, even when isolated.

II. HYPOTHESIS. The contamination occurs because atoms of radium throw off positive and negative particles thus changing the radium into other elements.

III. CONSEQUENCES. If radium throws off positive and negative particles, then these particles should be attracted by positively and negatively charged plates.

IV. TEST.

V. RESULTS.

VI. CONCLUSIONS.
INSTRUCTIONS: Read the following passage and write a conclusion concerning the validity of the hypothesis that is discussed.

Rutherford's demonstration that an atom consists of negative particles at great distances from a positive core posed immediately the question: what keeps the electrons from falling into the nucleus? A possible answer was motion in elliptical orbits. Just as the moon is prevented from falling to the earth by the centrifugal force of its motion, so perhaps the rapid motion of each electron around the nucleus counter-balances the electrical attraction between them.

But this idea presents difficulties. According to Maxwell's theory, an electron so moving should emit electromagnetic radiation continuously. Giving out radiation means that it should continuously lose energy, its orbit should become steadily smaller, the wave-length of its radiation should grow longer, and at length it should collide with the nucleus. Now electrons simply do not act that way, Maxwell's theory or no Maxwell's theory.


It is clear from the foregoing that students of EST must be competent in the rhetoric of EST as well as in its vocabulary and sentence structure. The question arises whether EST rhetoric is simply something else for the student to master or an aspect of EST which integrates with the other aspects of EST comprehension in such a way as to contribute to the reader's over-all competence in the language. What follows will suggest that a developed competence in the rhetoric of EST can ease the burden of comprehension of EST passages by developing the skill to use the passages themselves as means for acquiring new EST vocabulary. As suggested above, a great deal of pedagogical effort is afforded to the teaching of special-ized EST vocabulary (technical terminology). Should it be the case that a grounding in the rhetoric and discourse of EST can provide the
student with the necessary skills to technical vocabulary development, such a demonstration would constitute strong motivation for including EST rhetoric and discourse as a component in EST curricula.

As a means for gaining a perspective on the learning of vocabulary in EST consider first the brief reading passage in Figure 10. This passage, taken from an essay by Eugene Nida and reprinted in Danielson and Hayden in a textbook in reading comprehension for students of English as a second language, represents for students of ESL the common reading comprehension problem in relation to vocabulary. Scanning the passage in a cursory fashion the reader can identify immediately a number of items which, by virtue of their idiomaticity, are not amenable to ordinary means of interpretation (recourse to a dictionary, for instance): tackle, from the wrong end, plunge into... These are items which, in the ESL textbook, need to be glossed or otherwise specially dealt with in order for full comprehension of the passage to be insured. Apart from this, the passage is the extended development of a simile, occasioning further comprehension difficulties. The ESL (or EST) student trained in reading comprehension through such passages is compelled to conclude that reading English is a task not unlike the interpretation of a cipher: possible, provided the code book is available.

FIGURE 10

Our primary trouble is that we have tackled the study of language from the wrong end. We are like the man who thinks he can learn to swim merely by reading books about swimming. In actuality, we learn by doing. The grammatical rules are valuable as we plunge into the language and need some assistance. In the same way, advanced instructions about swimming
are helpful as we learn something from actual experience in the water. But reading books never makes a swimmer and learning rules never makes a practical linguist.

-----Eugene A Nida, "Listening, Speaking, Reading, and Then Writing -- the Fundamental Order in Language Learning." in Danielson and Hayden, Reading in English for Students of English as a Second Language, pp. 4-5. [emphasis: J. E. L.]

In contrast, consider the reading passage in Figure 11, embodying a more nearly EST-style development of a related subject-matter. Of particular note is the fact that Fig. 11 is a passage consisting entirely of technical terms with definitions given in context. An almost defining characteristic of EST introductory text materials is the overwhelming presence of definitions of technical terms given in context. This characteristic suggests that if students of EST can be provided with the skill to identify and interpret definitions of technical terms given in context, the burden of teaching such technical terms independently of teaching the rhetorical skill of identifying and interpreting rhetorical forms can be vastly reduced.

FIGURE 11

Language and speech are not synonyms. Speech is a concrete, physical act -- the production of specific utterances containing particular words arranged in particular ways and expressed by means of certain sounds. Language is a mental phenomenon, a body of knowledge about sounds, meanings, and syntax which resides in the mind.

Training in the identification and interpretation of context definitions is practicable provided that context definitions present a coherent rhetorical form in EST. Fortunately, it appears that such is the case. EST definitions of technical terms regularly appear as in the example in Figure 12. The EST definition begins with a citation of the term to be defined. This is followed by an equational or definitional predicate (be or be defined as). Next follows the designation of the class to which the term belongs. Then there appears a relational particle (relative pronoun or preposition). Finally, the differentia, those feature of the term which distinguish it within its class, appear. This structure can be conveniently represented in a formal way by the formula, \( T = C + D \), where \( T \) is the term, \( = \) is the definitional predicate, \( C \) the class, \( + \) the relational particle, and \( D \) the differentia.\(^2\) The regularity, however, does not attain a level of uniformity.

![Figure 12](image)

A thrust is a force that pushes an object forward.

\[
\begin{align*}
T & = C + D \\
\text{(term)} & = \text{(class)} + \text{(differentia)}
\end{align*}
\]

Consider Figure 13, containing an excerpt from a passage in an introductory physics text. This short passage contains technical definitions given in context for system and environment. Notice that the form of these definitions does not coincide precisely with the formulaic representation given for technical definitions in Fig. 12.

![Figure 13](image)

In analyzing physical situations we usually focus our attention on some portion of matter which we separate in our minds, from the environment external to it. We call such a portion
the system. Everything outside the system which has a direct bearing on its behavior we call the environment. We then seek to determine the behavior of the system by finding how it interacts with its environment.


In the case of the definition for system in Fig. 13, the writer states class (some portion of matter) and differentia (which we separate, in our minds, for the environment external to it) in the initial sentence, and in the following sentence he uses a definitional predicate (call), references the class (such a portion) and states the term (system). While this definition in context fails to evidence the overt internal structure of the T = C + D pattern of other definitions, it does present the same constituent elements. The constituents are merely extraposed and permuted with respect to the T = C + D pattern, the extraposition being the removal of the definitional predicate and term from the sentence containing the class and differentia and the permutation being the reordering of the definitional predicate and term in relation to the other constituents of the definition. The example suggests that while EST definitions in context may not be uniform, they may prove to be simple transforms of the paradigm case, T = C + D.

This suggestion receives support from the limited observations made to date by this author. Actual contextual definitions appear to vary from the T = C + D pattern in a small number of ways, representing permutations, extrapositions and reductions of the basic pattern. In addition to the permutation-extraposition case examined above, we find:
Permutation alone:³

"Quantities which possess magnitude only and can be combined arithmetically are defined as scalars."

Extraposition alone:

"We shall be only marginally concerned with tensors. These quantities possess magnitude but require two or more directional aspects to describe them completely."

Reduction of the basic pattern appears typically as the deletion of the relational particle:

"Force is the action exerted by one body upon another."

It does, indeed, appear that EST definitions of technical terms given in the context of introductory textbook passages vary in a small number of ways from the basic pattern. To the extent that observation of EST discourse continues to affirm this appearance, it will mean that the rhetoric of EST definitions for the purpose of comprehension and vocabulary development is eminently teachable.

Students learning English preparatory to technical and scientific training in an English medium face a substantial task, requiring them, as it does, to become competent in the vocabulary, sentence-structure and rhetoric of the English of their technical field. Were these aspects of EST virtually unrelated, the task would be enormous. The present paper has tried to suggest that the skills are related, that a full comprehension of the sentences of an EST argument depends on and is aided by an understanding of the rhetorical form of the EST argument and that the acquisition of vocabulary need not depend on specific vocabulary instruction alone — if the student of EST can master the skill of recognizing and interpreting EST definitions given in context. It is the author's belief that the skill is acquirable and can form a vital part of an EST curriculum.
FOOTNOTES

1 "Critical reading" refers to reading which employs inferential and evaluative skills.


REFERENCES


Grice, H. P. The logic of conversation, manuscript, 1968.

THE TEACHING OF PRONUNCIATION

JAMES W. MARCHAND

ABSTRACT

There are many situations where a rather exact pronunciation of the target language must be aimed at. There are at present many methods and modes of teaching pronunciation in use. The present article attempts a survey of these which is not language specific, along with a discussion of strategies of presentation and some suggestions. It intends to be reasonably exhaustive of the methods in general use.

Studies in Language Learning
Volume II, Number 1, Fall 1977
JAMES W. MARCHAND is a Professor of Germanic Languages and Literatures at the University of Illinois at Urbana-Champaign.
0.0 INTRODUCTION

There are many teaching situations where a rather exact pronunciation of the target language must be aimed at: the instruction of teachers of the language, the preparation of language experts (e.g. at the Defense Language Institute) and, although many practicing teachers might deny the possibility, the preparation of immigrant speakers who wish to assimilate into the host culture. In spite of the value attached to a good pronunciation of the target language, twenty-five years of teaching various foreign languages to Americans and American English to foreigners of various origins, as well as observation of language teaching around the globe, teaches me that we are usually satisfied with falling far short of the goals articulated, for example, in the MLA Foreign Language Proficiency Tests, 2nd level (MLA 1955). The reasons for this are easily found, and the remedy is ready at hand. We still do not have materials available for many languages, so that one is still forced to work with rough contrastive analyses, such as those put forward by Trager and Henderson (1956:v-vi) or, horresco referens, operate without contrastive analysis. Teachers are often not trained in phonetics or in strategies of teaching phonetics, so that many rough and ready, rule of the thumb explanations are found. Occasionally, one still encounters programs for immigrant in which no discussion of sounds is offered at all. What is needed is a guide for the instructor, so that he may know what to look for, along with a set of strategies on how to develop and present explanations of sounds. This cannot, of course, take the place of careful contrastive analyses of source-target languages, but a modicum of effort expended in the right way can lead to good results. This paper presents some problems I have noticed and some tentative solutions--it is intended merely to open the discussion.

This paper began originally as a strongly theoretical treatise on how
to do contrastive phonology. It was informed by the point that the hegemony of phonemics during the 40's and 50's, the rise and then hegemony of distinctive feature analysis in the 60's and 70's did a disservice to the language teacher who was interested in teaching the pronunciation of the target language. Phonemes are not pronounced, they are actualized in their allophones, and, to quote the title of Yao Shen's now forgotten paper, "Some Allophones are Important" (1955). Nor does a distinctive feature matrix offer much improvement, for, even in the relatively rich matrix proposed by Chomsky and Halle (1968), there are not enough features to handle such a relatively simple vowel system as that of German (Penzl 1976). Phonemic studies of American English, for example, do not mention that syllable initial /r/ is lip-rounded, since that is a redundant feature, merely an allophone of /r/. Textbooks of German have from time immemorial failed to mention that German /š/ is accompanied by lip rounding as contrasted with English /ʒ/ (which, by the way, explains the origin of the rounded vowel of Modern German löschen 'to extinguish' vis à vis Middle High German leschen). The same can be said for innumerable Russian textbooks which try to get Americans to "hiss through the teeth" to pronounce Russian /š/, actually a retroflex [š], easily taught to Americans by having them first place the tongue as if to pronounce an American /r/. The point is, when one is trying to learn or teach the pronunciation of a language, it is not simply the contrasts one is aiming at, but a satisfactory actualization of the phonemes.

1.0 STRATEGIES OF CONTRASTIVE ANALYSIS.

Where satisfactory contrastive analyses are not available, the course writer or even the classroom teacher will find it necessary to make them. If one is teaching English to foreigners, for example, it is imperative to determine the native language of each of the students and to examine a
contrastive analysis of the sounds of the source language and English. If English is the source language, and one is teaching a foreign language, the use of contrastive analysis is equally imperative, but much easier, since the teacher presumably knows both languages.

One must not assume, even if the source language is English, that a group of American English speakers is homogeneous as to pronunciation, or that the same explanation will suffice for all English speakers. For example, the French [a] offers little difficulties to many speakers of South Midlands, since it is the same sound used in such native words as pie, ride, night, but one could not tell Inland Northern speakers to pronounce French patte as if it were English right, since one would then get an /ay/. It is thus quite important for the preparer of explanations with American English as the source language to be familiar with at least the grosser features of American English dialects (Kurath and McDavid 1961; Francis 1958: Chapter IX). If the majority of students come from a certain dialect area, explanation is simplified.

2.0 A VARIETY OF SOURCE LANGUAGES.

If one is teaching English as a Second Language, Swedish for Immigrants, French for Migrant Workers, or any such course, where the target language is well known to the speaker, but the source languages less well known or not known at all, the problem is more difficult. There are, however, some tricks of the trade which may help in identifying potential trouble spots, even if the source language is unknown.

2.1 THE SOUND CHART of the language, if one can find a good description of it, will often indicate areas of difficulty. Thus, for example, the sound chart of Greek or Spanish shows underdifferentiation in that there is no distinction between [i] and [i], so that one must expect to have problems in that area
and needs to devise drills to work on this. Similarly, a hole in the chart will indicate the lack of a sound.

Where another alphabet is used, it is very useful in identifying potential trouble spots. Thus, the Hepburn system of representing the Japanese syllabary shows several problems:

<table>
<thead>
<tr>
<th>a</th>
<th>ka</th>
<th>sa</th>
<th>ta</th>
<th>na</th>
<th>ha</th>
<th>ma</th>
<th>ya</th>
<th>ra</th>
<th>wa</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>ki</td>
<td>shi</td>
<td>chi</td>
<td>ni</td>
<td>hi</td>
<td>mi</td>
<td>ri</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u</td>
<td>ku</td>
<td>su</td>
<td>tsu</td>
<td>nu</td>
<td>fu</td>
<td>mu</td>
<td>yu</td>
<td>ru</td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>ke</td>
<td>se</td>
<td>te</td>
<td>ne</td>
<td>he</td>
<td>me</td>
<td>re</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o</td>
<td>ko</td>
<td>so</td>
<td>to</td>
<td>no</td>
<td>ho</td>
<td>mo</td>
<td>yo</td>
<td>ro</td>
<td>o</td>
</tr>
</tbody>
</table>

One does not have to know Japanese in order to see here the typical Japanese problems of lack of /w/ before /u/ (Japanese typically say *ould* for *would*), the change of /s/ to [ʃ] before /i/, the change of /t/ to [tʃ] before /i/, the replacement of /h/ by [p] before /u/, etc.

2.2 OBSERVATION OF SOURCE LANGUAGE SPEAKERS SPEAKING THE TARGET LANGUAGE.

If one has the opportunity, the observation of source language speakers (e.g. on television, in movies, etc.) speaking the target language will often help in pinpointing problems. This is even true of the exaggerated forms one hears on the stage (cf. Blunt 1967). Thus, anyone who has heard the typical imitations of South Americans saying "the dog shoed my chew" for the dog chewed my shoe" shows that South Americans typically have a problem in distinguishing between American English /ʃ/ and /ʒ/.

2.3 OBSERVATION OF LOAN WORDS FROM THE TARGET TO THE SOURCE LANGUAGE can be of great help. In Japanese, for example, *earphone* is rendered as *i'ahon*, *megaphone* as *megahon*, clearly showing the lack of an /f/. One must be careful not to read too much into the spelling, however: German *Jazz* has numerous pronunciations, from [jats] to [dʒæz]. If one has an
opportunity to hear the word spoken, doubt can be removed. In Japanese, for example, English /tiy/ is usually rendered as [t,i], as in chiiμu 'team' (cf. also chippu 'tip').

3.0 TYPES OF PROBLEMS.

There is, of course, no substitute for a carefully controlled contrastive analysis. Such an analysis should not be done in a haphazard fashion, however, but the course writer or the teacher should know what to look for and how to find it. The following are some suggestions as to types of problems encountered.

In trying to decide the staging of the introduction of pronunciation problems, which strategies to employ, etc. it is imperative to have the whole problem laid out before one. Problems will usually center around the following:

1. Sounds so much like those of the source language that there is no necessity to bring them up in class. It is important to identify these, since there is nothing more disconcerting to the student than having a careful explanation of what he already knows, for this often ends up making him unsure. In teaching German, for example, teachers often carefully explain that the German /t/ has a placement different from that of the American /t/, which is not only untrue, it is also confusing. It is true that Americans often use a flap for what is spelled t in medial position, but that is another matter. For German, for example, no remarks on /p t k; b d g/ are necessary.

2. Sounds like their source language counterparts, but differing in at least one important parameter. If English is the source language, the front rounded vowels of German and French, for example, are well known problems. Well known also is the solution: adding the parameter of lip rounding. The English "long" vowels with their off-glides (/ow, uw, ey, iy/) make it particularly difficult to teach an American English speaker a language which has "pure" vowels, such as Spanish or French. For Japanese speakers trying
to learn English, the /w/ is difficult, since Japanese /w/ appears only before /a/ and is a voiced bilabial spirant rather than an attack consonant.

3. Sounds which the source language possesses, but which occur in unfamiliar environments. For the German learning Russian /x/ might not seem to be a difficult phoneme, since German also possesses a /x/, but the German /x/ does not occur in initial position. Americans, for example, have no difficulty in pronouncing the sequences /ts/ and /pf/ (hats off and cupful), but they offer difficulties to Americans learning German because they occur in initial position. The speaker of Cuban Spanish can easily pronounce American English /m/, but not in final position or before /k/.

4. Sounds which the source language does not have. American English does not possess the German /ɡ x R/, and particular attention must be paid to the acquisition of these sounds in teaching Americans to speak German. Actually, if the teacher is skilled and uses contrastive parametrics, there is no real difficulty in teaching such sounds. In the example above, for example, if the teacher knows that [i] is pronounced in the mid-palatal region and the [ɡ] is a voiceless mid-palatal spirant, one can simply have the students say English /iy/, hold the tongue in that position, and blow the breath across it. The recognition that the major difference between /R/ and American English /r/ is that American English /r/ is retroflex, makes it easy to teach /R/. One merely has the students place the tip of the tongue below the lower teeth and say row, row; if students get too much lip-rounding in, one can have them do it while smiling.

5. Underdifferentiation. If may happen that the source language or the target language or both have correspondences in which there is underdifferentiation: this means that one language will have free variation where the other has two phonemes. Spanish offers a number of examples:
in the pronunciation of many South Americans, /j/ may be pronounced as
[j] or [z̃] or [dz̃], and /č/ may be pronounced either as [č] or [š]. This
means that such speakers actually cannot hear any difference between /dz̃/
and /j/, /č/ and /š/, respectively in English. This problem is encountered
frequently in language teaching and requires a good deal of patience. Here
bracketing exercises (see below) can be of great use. Thus, English is
underdifferentiated vis à vis French /a,ə/, as in /pwal/ 'skin', /pwal/ 'stove'.
One can offer the American student exercises of the type [a] [a] [æ],
"bracketing" the [a].

4.0 THE CORRESPONDENCE OF GRAPH AND PHONE.

When the student begins to read the language, it is quite natural that
there should arise spelling pronunciations and interference from the graphic
system of the source language. For the American student of German, there is
the problem that <z> stands for /ts/, <j> for /j/ instead of /dz̃/, etc.
The morphophonemic spelling of such languages as German and Russian, which
have final devoicing not indicated in the writing system (e.g. German /ta:k/,
written Tag), makes for difficulties for the foreigner. The point is that the
mapping of graph and phone is frequently quite poor and is for English almost
pathological, and that one must expect interference from other graphic systems
known to the student. Where these can be determined in advance, the teacher
can be on the lookout for them. A distinction should be made between problems
caused by internal inconsistency in the writing system, for which no contras-
tive study is needed, and problems caused by interference. For Swedish, for
example, where one cannot tell by inspection whether an initial k before
front vowels stand for /k/ (e.g. kissa 'to urinate') or /s/ (e.g. kyssa 'to
kiss'), the teacher should prepare lists of words in which it means /k/ (the
rarer of the two).
5.0 MORPHOPHONEMIC PROBLEMS.

Constraints on the appearance of phonemes of a larger than phonemic nature, as well as constraints on the appearance of morphemes of a phonemic nature are here termed morphophonemic. The appearance of syllable initial [?] in English and German before vowels offers difficulties for languages which have phonemic glottal stop and for those (like French and Spanish) which have a weakly articulated glottal stop. Thus the French of Spanish speaker is often heard to say an /h/ in such cases, since neither of these languages has an initial /h/, and that is an accepted vowel initial sound in hiatus. The English plural morphemes, selected both on a phonological (/s/ after voiceless, /z/ after voiced, /əz/ after /s/ and /z/) and a morphological (e.g. children, oxen) basis, and requiring often changes in the base (/haws/, plural /hawzəz/), is a notorious example of complicated morphophonemics. One must be on the lookout for interference caused by the native morphophonemics; the American English speaker who is used to /hawzəz/ can find it quite difficult to handle the final /s/ of the German genitive /hauzəs/, for example.

6.0 ARTICULATORY BASE OF MUNDSTELLUNG.

It is often maintained that different languages have a different articulatory base, that American English is pronounced in the front of the mouth and Russian, e.g., is pronounced in the back of the mouth. Such statements are impressionistic in nature and in general should not be used. For example, many foreign textbooks of English point out that it is spoken with greater energy than the native language, whereas most textbooks of foreign languages for English speakers stress that the foreign language is spoken with greater energy than English. These are merely expressions of the natural urge on the part of the teacher to get students to be more attentive
to pronunciation. Occasionally, however, taking note of articulatory basis, if not actually mentioning it in the classroom, can be of value, as in the case of Japanese, with its characteristically lip-spread articulatory basis, or British English, with its characteristic lip rounding.

7.0 INTONATION, JUNCTURE, TONE, ETC.

If the intonation of the source language differs strongly from that of the target language, a number of problems arise: syllable counting languages such as Japanese and Spanish, tone languages such as Chinese and Thai, quasi-tone languages such as Swedish. One needs to distinguish between problems which are word-bound, such as the tones of Swedish, and which must be treated as lexical matters, and problems which are sentence bound. The placement of the stress is a quite difficult matter for Americans learning Russian or Russians learning American English; for Hindi speakers, who have level stress in the source language, American English stress is a great problem; and the unaccented vowels of English are difficult for many different traditions, since many languages permit full vowels in unstressed position. For many languages, particular care must be taken with compound nouns, e.g. in Swedish, where bomull 'cotton' has the stress pattern *bomull* rather than the familiar English *handcart* pattern; the same may be said of German *Ziegeldäch* rather than *tile roof*. In the string of the utterance, American English requires the insertion of */ɔ/* between a front vowel and */l/* or */r/* (e.g. *[fɪəl] 'feel') and this needs to be taken note of whether English is the source or the target language.

8.0 METHODS OF TEACHING.

There is a bewildering array of methods of teaching pronunciation, and the teacher should be encouraged to develop his own. The following list is incomplete, but it represents, I believe, the major types of
explanations with a discussion of their faults and merits.

1. **Imitation.** It is obvious that imitation is the best method of learning pronunciation, where the students are good mimics. It is, however, rare that a student will be able to imitate a foreign accent well, and it is well to supplement imitation ("mimicry-memorization") with drills and explanations designed to handle particular difficulties.

2. **Imitation of foreign accent in source language.** It is good for the student to observe members of the target language group speaking the source language, especially if the student is a good mimic. The words are familiar, so that he can concentrate on the pronunciation alone. This can even work well if the pronunciation is exaggerated, as in stage pronunciation, especially in the case of intonation and articulatory base. Unfortunately, such examples are not always available and most students are not good mimics; not everyone can tell a good dialect joke. If the teacher is not too inhibited, it often works for the teacher to use the foreign accent; this is, of course, difficult in the case of English for foreigners, since it is unlikely that the teacher will possess the requisite knowledge or skill.

3. **Phonetic training.** Many people still advocate phonetic training as a preliminary to learning the foreign language, and this technique is time-honored in the teaching of French. It is, however, not likely to be efficacious in the case of immigrant workers, for example, for both practical and psychological reasons. Where one has time and can effectively teach phonetics, this method is obviously valuable. I do not recommend it.

4. **Physiological explanations.** Since most explanations of sounds will be in terms of organogenetic phonetics (e.g. IPA), it is obvious that, if one can get the student to place the organs in the proper position, the proper sound will be produced if the appropriate movements are made. On the other
hand, most students have no idea where the tongue is in the mouth, or what it is doing. This means that physiological explanations must be restricted to parts of the oral cavity which the student can see, such as the lips.

5. Sound charts. There are available many charts of the positions of the phonating organs, showing the height of the tongue, the position of the hump of the tongue, etc., from schematic diagrams to x-ray photographs, but the same thing applies to them as applies to physiological explanation. It does the student no good to know that the back of the tongue must be raised if he cannot raise it or control it.

6. Natural sound. There are numerous explanations of the uvular which recommend lying on the back and gargling as a method of mastering the sound. There are also those who recommend "whistling with the tongue" as a method of placing the organs in the proper position for pronouncing the [ç] sound. Lying on one's back places the uvula in the wrong position for a uvular trill, and it is rare to find more than one or two students in a class who whistle with the blade of the tongue. The same can be said of the "clear your throat" explanation of [x], since there are many different phonetic realizations of "throat clearing". Occasionally, the natural sound method will work, as in the case of languages with initial [p], such as Japanese and Irish, where the student may be told that this is the sound made in blowing out a candle, but even this is not foolproof. It is best to avoid the natural sound explanation.

7. Remove the phonic context. In dealing with Spanish speakers of English, who have trouble with initial /sp/, for example, or English speakers of German, who cannot pronounce initial /pf/, one can begin with a vowel and try to get the student first to whisper it and then to reduce it to nothing. This method is good for such simple problems, but difficult in other cases. It is often recommended that one try to get students to say Dick for German
dich ([diɡ]) and slowly relax the tongue until the k becomes a spirant. This is difficult for most students to accomplish and usually ends up with a very back [ɡ] or actually a [x], since the point of articulation of American English /k/ is much farther back than that of [ɡ]. Another method proposed several times for teaching [ɡ] is to have the student pronounce American English hue and slowly remove the offglide. This will not work for one reason because many Americans do not use [ɡ] in hue, and for the other because it is difficult to get students to remove parameters. In order to use this method, one must be sure of the phonetic facts and must take into consideration the psychological blocks of students.

8. Mechanical aids. There are many mechanical aids which may be of use and are not difficult to obtain. For speakers of American English, a pencil between the teeth will inhibit the jaw movement characteristic of /ɔy/, for example, when learning the sounds of a language with "pure" vowels. A mirror is very useful for observing those organs which may be observed externally, e.g. for a Japanese who is trying to learn American English /w/. For advanced students, a laryngoscope is a valuable aid in learning a language such as Arabic or Kutenai where there is much pharyngal activity, especially if high-speed movies are available, which is not likely to be common. For the most part, mechanical devices such as false palates and the like are usable only in the phonetics lab.

9. Recording and listening. A device which is excellent for pronunciation is the recorder and the playback. Where the teacher is unfamiliar with the language taught in some or several aspects, e.g. where there are dialects to be taught, it is imperative to have available recordings of a competent native speaker. For practicing at home, such recordings are imperative, since otherwise the student will have a tendency to reinforce his own errors
or to learn errors from his fellow students. The advent of the cassette recorder has made it possible to have a "portable lab", especially where the recorder is equipped with both a playback and a recording head, so that the master track is not erased. This enables the student to hear the target language, to record his own utterances and to compare. This is an area in which many developments are possible.

10. Other uses of the tape recorder. I cannot pause here to outline all the uses to which the recorder and the lab may be put (cf. Stack 1966), but there are some interesting uses often neglected. A multi-track stereo can usually be rigged to function as a backwards playback, a device which is of great value in convincing students as to the nature of utterances. Many Americans, for example, refuse to believe that they have offglides in day and boot, but can be convinced by a backwards playback which reveals the first as composed of [jaed], the second as [twAb]. Where a speech stretcher is available, it can be of enormous value to the teacher in remedial listening.

11. Contrastive exercises. Here we must distinguish between contrastive exercises within the target language and source-target contrasts. Minimal pairs and quasi-minimal pairs within the target language are of limited usage in establishing the contrasts. For the most part, students do not profit much from them because they are in unfamiliar surroundings and they often do not hear distinctions. Where the contrasts can be shown to involve taboos (e.g. Swedish ['kissa] 'to urinate' and ['ɡyssa] 'to kiss'), contrastive exercises are especially efficacious.

Source-target contrastive pairs are excellent in showing up small differences. American English belt, for example, is usually pronounced with a [ɔ] before the /l/ ([bɛ̂l̩]), whereas German belt 'barks' has no such
Contrastive exercises, with the English pronounced by an American, the German pronounced by a German, can show the student quite clearly the difference. It is also of value to have the teacher use the foreign pronunciation in an English phrase, since the words are familiar and only the sound is foregrounded.

12. Bracketing exercises. It frequently happens that the target language will have, e.g., three phonemes where the source languages has but two, leading to underdifferentiation. Particularly if these sounds are vowels, it can be very difficult to get students to maintain a distinction and not substitute one of the vowels of the source language. French, for example, has two a-sounds, [a] and [a]. Here is [a] which offers the difficulty, since [a] corresponds to an English phoneme. One begins with the realization that [a] is intermediate between the two English sounds [æ] and [a]. One has the student pronounce [a], [æ] then [a] in sequence several times. This will illustrate the position sought and one can return to the problem several times during the course. Bracketing is of limited use, but it is valuable in the case of underdifferentiation, particularly for remedial work.

13. Tonal exercises. If the source language possesses good analogs, one can produce good exercises for a tone language by "interpreting" tones, e.g. for a tone language which has rising tones (lexical), one can point out that the rising tone sounds like a yes/no question in English; for a language with falling intonation for a question, one can point out that this sounds like an English command, etc. for a language such as Russian, where the accented vowel does not receive high pitch, exercise on this factor is imperative, if difficult.

14. Analogs in the source language or other languages. It is dangerous to use analogs, e.g. point out that the German /o/ in Gott is like the /o/ in
not, "as pronounced in the South of England," for one can never be sure that
the student knows the analog. The same may be said for the use of other foreign
languages, unless the student knows the language well.

15. **Defining pronunciation on the page.** It is important to realize, in the
light of what has just been said, the difficulty of indicating pronunciation
on the printed page. Many examples of rough and ready phonetic transcriptions
are still in use as guides for student pronunciation. When one considers that
thousands of Americans grew up believing that there was an r on the end of the
first word of Brer Rabbit or the ther of Winnie the Pooh, one is made somewhat
hesitant about the possibility of rendering pronunciation by such means. In
both cases the writers were members of r-less dialects and used er to render
the phoneme /A/. Even the use of the IPA is not fool-proof, for each has his
own interpretation of it, as the compilers of the Linguistic Atlas of New
England well knew (Kurath 1939:122ff.). Of course, the teacher will not use
the phonetic alphabet in teaching students, but he and the course writer need
to be on the lookout for pitfalls in using it to determine contrasts, etc.

16. **Phrase by phrase.** Naturally, the teacher needs to keep in mind that the
language is typically spoken in utterances, and avoid overdependence on single
words in exercises. For such things as sentence sandhi, e.g. American English
whatcha for what are you ..., it is important to teach the formation of utter-
ances.

17. **Parametric practice.** Practicing the acquisition of parameters by reading
passages in the source language with lip rounding, retroflex pronunciation,
etc. throughout the passage (cf. Pike 1947:Chapter 2) is excellent practice
for the phonetician, but it has limited use in the language classroom, much
like the use of phonetics (cf. 4 above).

18. **Parametric difference.** Undoubtedly the best method of teaching pronun-
ciation is that of finding an analog in the source language and adding
parameters, where this can be done. When one considers that the major problem in teaching pronunciation is getting the organs in the proper position and controlling the movement (manner of articulation), it is obvious that sounds in the source language offer the best basis for doing this. It is important that the deviser of the explanation realize that it is the organo-genetic aspects one is dealing with and not spelling, etc. Often a sound from one class will offer a good analog for a different class, e.g. the mid-palatal vowel [i] for the mid-palatal spirant [ç], where one can simply have the class pronounce the /iy/ of machine, hold the tongue in that position, and blow the breath across it; this offers a satisfactory mid-palatal voiceless spirant, since the tongue is in the mid-palatal position and flattened. To pronounce the Russian /צ/, which is retroflex, the student merely pronounces an American /r/ and leaves the tongue in that position, etc. For some varieties of the Swedish /ʃ/, which are lip-rounded, an American English wh-sound (voiceless labio-velar spirant) offers a good base, for those dialects which distinguish initial w- and wh-. For German natives learning English, voiced final stops (/b d g/) are quite difficult, but the difficulty can be overcome by lengthening the preceding vowel, since that is frequently the clue that the final consonant is voiced in English. A careful contrastive analysis should reveal good candidates for this type of explanation.

9.0 STRATEGIES.

Both in doing the contrastive analysis and in writing the course or devising the explanation and the drill, there are a number of hints which will make things easier.

1. Do not assume uniformity in the source language. Expect dialects to offer different problems.

2. Do not assume uniformity in the target language. Be aware of the variations found in the target language. It is quite proper to teach a certain
variety of the target language, e.g. "good" English, but one must not ignore the fact that students are quite likely to hear other varieties and imitate them.

3. In doing contrastive analysis remember that not only contrastive parameters are important.

4. Note not only problems in the sequence of phonemes, but also types of glides. For example, American English /l/ is frequently accompanied by a [v] or a labial off-glide, whereas German /l/ is accompanied by an [i] off-glide, so that the American who pronounces German als as [æls] is likely to be misunderstood as having said aus. Languages like Icelandic and Russian, where there is an opposition between palatalized and non-palatalized consonants, often insert [w] between /k/ and /o/, for example, saying [kwɔm] for come, etc.

5. Problems of staging. Group like sounds together, that is, those which present similar problems, e.g. the front rounded vowels should be presented all at the same time to an American learning a foreign language. It is important also to identify early those problems which will inhibit communications or cause infringement of taboos.

6. It is important to make up a list of types of errors (cf. Prator 1957), to administer tests and, if necessary, remedial work. Ingrained habits are difficult to get rid of.

7. Whenever individual work is possible, find out what other languages the student has learned; third language interference is common.

8. Overprecision. The most common error made on the part of language teachers is the desire for too much precision. Most languages have a large range of variants for a particular sound, and one must not be led by "phonetic" descriptions to try for a pronunciation which is too precise and therefore
wrong. In German and French, for example, it is quite rare to hear a uvular trill for /R/; many varieties are heard; if one merely keeps the tip of the tongue down, a satisfactory /R/ will result.

9. Do not be misled by descriptions of the "standard" language. Many varieties of South American Spanish, for example, do not use an apical trill for initial and geminate /r/, but rather a spirant. An apical trill, for such varieties, sounds forced and stilted.

10. Do not try for more contrasts than are needed. Most languages have a minimal system and maximal system; the minimal will do. In French, for example, there is no need to try for differentiation between /ɛ/ and /œ/, since many speakers do not have it.

11. Watch for substitutions. Students are ingenious at substituting, e.g., /f/ and /v/ for English /θ/ and /ð/. Many natives, especially Americans, are quite tolerant of foreign pronunciation and will accept almost any substitution.

10.0 SUMMARY

In the above, I have tried to cover all the methods in general use and most of the problems encountered in the teaching of pronunciation. For a survey of work which has been done and is being done in contrastive analysis, see Di Pietro (1976). The teacher should be warned, however, not to put all the eggs in the contrastive analysis basket. Nothing can replace careful observation and inventive explanation. I hope that this article may have aided in showing the way.

BIBLIOGRAPHY


MLA 1955. Qualifications for secondary school teachers of modern foreign languages. Publications of the Modern Language Association 70:46-49. This statement was endorsed by almost all organizations of language teachers and formed the basis for the MLA Foreign Language Proficiency Tests for Teachers and Advanced Students.


RECENT DEVELOPMENTS IN MEMORY RESEARCH AND THEIR IMPLICATIONS FOR FOREIGN LANGUAGE TEACHING

BERNICE MELVIN

ABSTRACT

This article examines the structure of semantic memory models like those proposed by Anderson and Bower, Norman, Rumelhart and Lindsey, Winograd, Shank and Riegler. These are shown to have certain common features: a low capacity buffer which holds acoustic input that has been decoded into morpheme structure, the construction of 'semantic objects', and the storage of these in long-term memory. The decoding and encoding processes embodied in these models are detailed and the specific limitations of models as accurate representations of the structure of memory are indicated. Several implications for the teaching of foreign languages can be drawn from the study of semantic memory models and research in retention; among these are: (1) methods for teaching comprehension should be structured so as to promote a learning shift from conscious coding to automatic coding, (2) it is desirable for foreign language learners to acquire a good listening comprehension ability with little production ability at the outset of their training, (3) syntax and vocabulary should never be introduced simultaneously in comprehension or production building activities, (4) the use of native language analogue patterns for the introduction of vocabulary is desirable in the early stages of language instruction (5) syntax patterns which give direct representations of simple semantic relations should be learned and automatized first, and (6) initial production activities should not depend heavily on pattern practice and substitution drills since assembly of vocabulary and syntactic relation is largely bypassed by such exercises, their main effect being to smooth out the level of phonetic sequencing and realization.

Studies in Language Learning
Volume II, Number 1, Fall 1977
BERNICE MELVIN is an Assistant Professor of French and Italian at the University of Minnesota.
INTRODUCTION

There are two complementary approaches to the construction of a comprehensive theory of foreign language pedagogy, neither of which is sufficient in itself. One may investigate the internal structure of the material or subject matter. The tool for this should be linguistics, and the product should be both a rational, comprehensive grammar of the foreign language being studied and a description or taxonomy of the sounds, syntactic structures and other entities of the language. This is what a very good textbook writer does, implicitly or explicitly, as he organizes his book. One may also investigate the capabilities, strategies, and processes which the learner brings to the task; that is, the psychology of the learner. The techniques for this type of investigation are not, as yet, very well developed, and the theorist must draw on psychology, psycholinguistics, artificial intelligence, and theories of information processing.

The purpose of this paper is not to investigate the internal structure of a foreign language but to describe certain new developments in the psychology of memory which might be collectively termed "semantic memory" and to explore the general implication of these models for linguistic and pedagogical theory.

BACKGROUND: PSYCHOLOGY OF MEMORY

Since the time of Ebbinghaus, research in human memory has tended to center on meaningless material, such as the serial learning of lists of
nonsense syllables. Even when the individual items were meaningful, often the case in paired associate learning paradigms, each item typically remained isolated and disconnected from surrounding material. Experiments were typically arranged so that so-called "complicating factors" such as phrase grouping, paraphrase, meaningful structure, or connected narrative, did not and could not occur as phenomena.

Furthermore, memory research was characterized by conceptual impoverishment. Rather than develop concepts directly out of the phenomena of human memory, experimenters borrowed concepts developed within the domain of animal learning--stimulus, response, transfer, generalization--and applied them verbatim to the explanation of human verbal learning and memory. Under such conditions, it is not surprising that memory research did not contribute much to our understanding of language performance and learning.

1.2 LINGUISTICS

Concurrently, linguistics, with its emphasis on structure, had a great deal to say about those phenomena excluded from memory research. As a result of the logical and formal investigations of Chomsky and the transformational grammarians, concepts such as "grammar," "grammatical rule," "syntax," and "phrase structure" become tremendously more precise, general, and theoretically powerful. However, transformational generative grammar reinforced two tendencies which limited the potential rapport between linguistics and the psychology of verbal behavior. First, a commitment to describe language in purely syntactic terms, excluding any considerations of semantics. Such a theory had no need to deal seriously with thought, meaning, or memory. Katz and Fodor (1964) actually argued that "semantics" was a pseudo-category which would vanish as syntactic theory
advanced. Second, a commitment to describing *langue* as the regularities of an abstract cultural entity, rather than the comprehension or productions of particular speakers. Thus, grammar rules do not describe psychological processes, conscious or otherwise. They say nothing about the time-dependent characteristics of production and comprehension. Transformational grammar cannot talk about "forgetting," "negative transfer," "using the wrong rule," or "exceeding the limits of short term memory (STM)." And though the psychology of speaking and of hearing are two different things, transformational grammar provides only one description of a neutral "langue."

Of course, there is some kind of relation between grammar rules and psychological realities. Some psychologists, e.g. George Miller, have attempted to make grammar into a psychological model. But the re-interpretations and augmenting assumptions required show the awkwardness of such a procedure. It is also true that, in recent years informational processing (IP) influence on memory research, and a renewed interest in semantics within linguistics, resulted in some rapprochement between the two fields. But while this was going on, a new and quite exciting synthesis took place within the area of computer science.

1.3 ARTIFICIAL INTELLIGENCE (AI)

Presently, those who have to communicate everyday with computers must use a variety of special programming languages. Life would be very much simpler for them if the machine would accept a command statement or question phrased in everyday English, Russian, or whatever; comprehend it in a sensible, normal way, and take appropriate action. And so, understandably, natural language comprehension has been a major outstanding problem of AI research.
Early attempts at a solution were notably unsuccessful. Researchers learned from experience that there were no shortcuts: parsing, to determine the syntax of the sentence contributed, by itself, little or nothing to determining meaning. Likewise, S-R-type associations between keywords and responses were totally inadequate. It became clear that if a computer program were to comprehend a sentence sensibly and normally, it would simply have to approximate those processes a normal person goes through when comprehending it.

1.4 SEMANTIC MEMORY MODELS

I would now like to describe, briefly, the models created to meet this challenge. Working models have been produced by Anderson and Bower, Norman, Rumelhart and Lindsey, Winograd, Schank, and Rieger. For convenience, they may be termed semantic memory models. Although they differ in detail they share the following common features in terms of their general analysis of language comprehension.

1) Acoustic input is decoded into morpheme structures which are held in a low-capacity buffer. (The models under review do not attempt to model this acoustic coding, but require keyboard input.)

2) The stored morphemes are used to build in "working memory" a non-verbal structure which represents the meaning content or "idea" of the input. Winograd calls these structures "semantic structures"; Bower and Anderson call them "ideas"; Rieger and Schank, "conceptual dependency diagrams." We may label them, collectively, "semantic objects," (SO). The building process, which is specific for each language, may use syntax (that is, formal parsing) to varying degrees. The SO built up is language-independent.
(3) Understanding consists of storing the newly constructed SO in long-term memory (LTM). LTM already contains many other SOs which correspond to the listener's personal memories and general knowledge of the world. "Storage" means making all relevant connections between existent SOs and the newly created one.

Since the notion of "semantic object" is crucial to this approach let us more closely define the term. Semantic objects are abstract (i.e., formal) objects which are supposed to represent meanings, ideas, or intentions (the terms are interchangeable in this context). Ideas are conceptualized as the British empiricists thought of them: complex ideas are made up of simple ideas which are combined or related in various ways. The set of simple ideas, the set of possible connection types, and the set of combination rules are all thought of as precisely specific and fixed.

1.5 THE DECODING PROCESS

The processing by which an acoustic signal is decoded into a SO is of crucial interest to linguistics and pedagogy, for this describes the strictly language-dependent portion of the listener's performance. Since Rieger's model appears to be the most sophisticated, as well as the most psychologically meaningful, we will concentrate on it.

Each model has a dictionary of root-morphemes; each definition contains syntactic information in feature format (e.g., +verb, +transitive) and a skeletal semantic structure which represents the basic meaning of the word. Each word in the input is decomposed into root +inflections, and the inflectional information is added to the syntax list (e.g., +pres, +3 p.sing.). As words are looked up, their semantic structures are added to working memory where they remain until they can be incorporated into the SO under construction. Certain words ("function words") do not have
any associated meaning structure but, like word-order and inflectional
information, direct how the simple pieces of meaning should be combined to
form a more complex meaning (verb-recipient; instrument-action).

Each word may bear, in addition to its meaning structure, a set of
"requests." Intuitively, requests are things to keep a lookout for during
decoding. For example, the verb "want" might bring with it requests for
an inanimate object, an infinitive object, and a subject. When the
request is satisfied, a particular type of semantic building is done.

Often, the mutual semantic selection constraints created by requests are
so great that little or no syntactic information is required to construct
the SO corresponding to the total sentence. This is particularly true of
verbs, which often have numerous "slots" which must be filled by specific
types of meaning-objects. Rieger and Riesbeck's parsing therefore, is
oriented toward determining the main verb of the sentence which provides
a "core" meaning around which the balance of the SO can be constructed.

Syntactic information is used only as a last resort.

1.6 ENCODING

Goldman, Schank's student, has performed the most psychologically
sophisticated analysis of output. Once a particular SO has been segregated
for output, encoding takes place in three steps:

1) choose vocabulary

2) choose syntax relation

3) linearize into correct word order.

Steps (1) and (2) are accomplished simultaneously. A preliminary
examination of the SO determines its structural type (cause-effect, physical
movement, mental operation), and a discrimination net appropriate to that
type is chosen.
A "discrimination net" is a sequence of inquiries. Each inquiry asks a yes-no question about some aspect of the SO—e.g., does ACTOR=RECIPIENT?; does ACTOR=DOER? did recipient possess object prior to time of sentence? The next inquiry in the sequence is always determined by the answer to the last one. The total sequence determines a particular word sense e.g., if recipient did possess object previously, return would be appropriate as verb; otherwise give would be chosen. The discrimination net can also inquire of LEM concerning semantic points: does the concept MILK have feature SOLID or LIQUID? and use the answer to choose drink versus eat. Or it can interrogate memory (was Mary told this before?) to choose remind versus tell as verb.

Each word sense has a particular graphemic form. It also brings with itself a certain syntactic framework. Put, e.g., requires a locative; give, in its most concrete sense as a subject, object, and indirect object. Each word-sense has a list of these required syntactic relations, and each syntactic relation has instructions telling where in the SO to look for the sub-concept corresponding to it.

If the sub-meaning corresponding to a syntactic relation is sufficiently simple (e.g., MILK) it may be realizable as a single lexical item. But if the semantic sub-object is complex (say corresponding to "drink the milk" in "I told her to drink the milk") the whole analysis process must be performed recursively upon the direct object "to drink the milk", discrimination net, syntax relation list, etc., before the analysis of told is resumed. As analysis of each syntax relation or lexical item is completed, that item is added to a tree-structure called the "syntax-network". The base node of the tree corresponds to the entire sentence and the twigs are lexical items.
Goldman calls the procedure just outlined (which combines steps one and two) "synthesis by analysis." The discrimination net is best thought of as a sequential simulation of the very fast, often subconscious processing during which various aspects of an idea suggest certain vocabulary words. The syntactic framework represents additional processing entailed by the original vocabulary choice. The completed syntactic network is somewhat like a phrase structure. However, the left-right order of lexical items does not correspond to proper word order in the sentence, but rather to order in which they were generated during analysis (generally verb first). The third step, therefore (that of linearization into correct word order) is done by established generation methods.

Before considering the contributions these models make to the theory of FL learning and pedagogy, one must admit that even cursory examination reveals two significant limitations:

1) The details of the models are often provisional, and depend upon the exigencies of the computer language and system used to implement the model. They will surely change as simulators gain more experience. Often the details of the models are ad hoc, based on neither linguistic nor psychological evidence. This is in many instances unavoidable, since empirical data concerning the relevant processing simply does not exist.

2) At present, the linguistic aspects of the semantic memory models simulate language performance but do not simulate language learning. As more and more messages are decoded and stored in LTM, the model can, and does learn more and more facts about the world. But a clever programmer must write and enter the routines for encoding and decoding which then remain fixed.
The models cannot be taught new processing capabilities.

Models are analogies and analogy does not imply identity at all points. Not every trivial detail of program implementation is meant to correspond to a cognitive process. What is important is that the main functional architecture at a certain level of resolution represent psychological reality; if this is the case, the internal workings by which the function is obtained falls below the resolving power of the model.

It is theoretically possible to construct a model possessing the capacity to write its own programs, though the problems implicit in such a project are not yet completely solved. However, such modeling will not be practical until we have a very thorough empirical understanding of language performance processing at each stage—and not just a few isolated aspects of performance, but the approximate totality of his capabilities. It would be futile to attempt to model language acquisition until we know what is being acquired.

2.0 IMPLICATIONS FOR FOREIGN LANGUAGE TEACHING

In discussing the implications for FL learning of the theories reviewed above we will consider only listening comprehension and speech production, leaving aside reading and writing which can be assumed to be special instances of comprehension and production where the constraints of time and memory load do not apply in the same way. We will consider the following questions:

1. What should the sequencing of production be relative to comprehension?
2. What kind of comprehension should be stressed?
3. How are syntax and vocabulary integrated in comprehension and production?
4. What should be the sequencing of syntax for comprehension?
5. What should be the sequencing of syntax for production?
6. How should production be introduced?

2.1 SEQUENCING OF PRODUCTION AND COMPREHENSION

There is much theoretical and some empirical support for a language program which would develop a high level of listening comprehension before moving on to production. According to Carroll (1974:146):

"There are good reasons from cognitive psychology for stressing a sequence that passes from receptive to productive tasks. The utterance of sound sequences...is assumed to be based upon templates that have been stored in memory; such utterances cannot be properly produced until the underlying templates have been well established. Furthermore, selection of the templates that are appropriate for conveying given meanings must be based on well-established associations are best established in the receptive phases of learning... Postovskv's study seems to provide clear evidence that favors earlv stress on receptive skills; in this study students of Russian who were not required initially to pronounce Russian sounds and words had, in the end, pronunciation equal to or better than that of students required to speak from the start.

Asher (1966) in experimenting with the "total physical response," where students are required to spend the first month or so of their language course acting out foreign language commands, found that students acquired large vocabularies and good pronunciation without being required to pronounce the language from the beginning.

It is not entirely clear that the parsing process involves matching segments of an input string against a set of templates. But there is little doubt that a perceptual code is created by listening to material in the foreign language; especially by listening to material which is easily comprehended. From the student's point of view speaking might be counter-productive if he is asked to speak while his perceptual scheme is still so natively English that he cannot hear (match) the foreign language sounds. The perceptual scheme is built up by several "hearings."
It can be constructed in a purely passive manner with no recourse to motor skills. This has two effects;

1) the learner can use it to understand spoken material;

2) he can also use it as a model to match by his motor system when he finally begins to speak.

So, it seems that it might be desirable to begin a new language by acquiring a good listening comprehension ability with very little production at first; early production could, in fact, be limited to pronunciation (repetition) of words and short phrases.

If we assume, and the model described here certainly suggests it, that the language learner uses his comprehension structure, on the level of phonology, syntax and vocabulary, as a pattern against which to control his production, then, if we wish to create students who are proficient producers of the FL in question, we should not introduce "free expression" the first day or week. We need to develop the learner's perceptual patterns to a high degree so that he has a high criterion when he attempts to "express" himself.

Comprehension and production could proceed simultaneously, as they do in many programs, but there is no theoretical reason for preferring this method—nor do the results obtained indicate that this is indeed the best way to proceed. One might feel that motivational factors influence the early introduction of production, although Asher's studies suggest that holding off production does not lead to bored nor less motivated students. In several studies he found that students who did not speak for the first twenty hours of classroom instruction neither lost interest nor finished the semester with "lower" speaking ability than those who were speaking from the first week. Simultaneous presentation of
listening and speaking may even be detrimental in that it forces the comprehension grammar to be introduced at the same time and in the same sequence as production grammar. The need for this overlap between the "active" and "passive" parts has not been demonstrated.

2.2 COMPREHENSION

Carroll (1974:39) has suggested that there be two comprehensive strands or two parallel streams, one devoted to exposing the learner to materials containing a relatively uncontrolled variety of linguistic elements (for example, vocabulary and grammatical constructions) and the other devoted to a rather carefully developed sequence of instructional content. The two streams would presumably have interactive effects, in the same sense that the second stream would give the learner the specific guidance that would help him in his efforts to master the materials in the first stream.

The most useful format for teaching listening comprehension is connected discourse since the narrative form creates a coherent context in which to introduce vocabulary items and also syntax. Short fairy tales, detective stories and adventure stories are particularly good because they are stylized and allow the language learner to make predictions based on his knowledge of the "genre." The point of this would be to shift as much as possible from conscious coding (processing) to automatic coding, which bypasses the conscious stores. The learner should be given contextual cues to reduce the load on conscious processing because if he does not understand what he is hearing he will learn little about, syntax, vocabulary, or phonology. Obviously, at the beginning all (or almost all) of the processing will be on the conscious level. If the processing of phonological and syntactic features can be
made automatic the likelihood of comprehension increases because some processing capacity is available for the anticipation and interrelating of meaningful segments.

It is necessary to maintain a delicate balance between conscious and automatic processing. The material should always be a little difficult but not so difficult that the student's processing scheme collapses. If the student has ceased processing because of overly difficult material, he will, obviously, not gain from listening to the passage. At a relatively advanced level it might be useful to introduce unrelated material—i.e., isolated sentences or surrealistic material which contradicts real-world situations, thereby contradicting expectations and so providing a useful test of the student's comprehension skill.

Another reason for concentrating on just one skill at first is given by Carroll who points out that several things are being learned when the learner is listening (Carroll 1974:141). He is becoming aware of the statistical regularities of the language and the lexical fields; he is also building up associative structures as well as being exposed to ways of expressing feelings and ideas which are idiomatic. The learner is also acquiring the appropriate context for certain modes of expression as well as the automatic, polite responses which are an important aspect of any language. There is a great deal of incidental learning occurring as comprehension is developed of which very little is, initially, measurable. If comprehension is learned first, it acts to guide production on a conscious level. As a result a lot of mistakes may never be made and so will not have to be "trained out."

2.3 INTEGRATION OF SYNTAX AND VOCABULARY IN COMPREHENSION AND PRODUCTION

Short-term memory research has made it clear that if too much new material is presented at once the short-term memory store becomes overloaded.
and little learning will take place. From this it can be inferred that new syntax and new vocabulary should never be introduced at the same time for either comprehension or production. Separation of the two would simplify learning of each one. Whenever possible old vocabulary should be used to introduce new syntax and old syntax should be used whenever new vocabulary is being introduced. Syntax and vocabulary interact in a complex manner so that if you know one (but not the other) the possible interpretations increase dramatically. At the early stages, when the cognitive load is heavy it is highly desirable, if not imperative, for both production and comprehension that known syntax be used to introduce new vocabulary, and vice versa. While it must be admitted that a student in the country where the FL is spoken would probably be simultaneously exposed to new vocabulary and new grammar, there is no theoretical justification for introducing both at the same time in the classroom.

2.4 THE SEQUENCING OF COMPREHENSION SYNTAX

The sequencing of syntax for comprehension poses several problems. Although it has not yet been demonstrated what the "best" order of presentation is, Carroll (1974:143) has noted that "second-language learners appear to be helped by guidance and explanations with respect to particular aspects of instructional content and that some learners... seem to need to have the instructional content develop 'logically' so that new learnings can build on prior learnings."

One of the main problems encountered in FL teaching is how and when to introduce tenses other than the present. It seems to be generally accepted that the student must have mastered a great deal of vocabulary and grammar before he is exposed to the past, future, conditional, imperfect, etc. The main difficulty with a slow sequential introduction of all the tenses is that the meaning-structures are very constrained as the learner is being
exposed to a rather truncated grammar.

Language involves the interaction of different levels, each of which is very complex. With a highly interactive system the effects of isolating one part are largely unpredictable (unless one has a definitive model of the system). One cannot build syntax to a high level and then work on something else; trying to teach one element of the system may be little more than a convenience for the teacher. From the point of view of comprehension, the information processing model suggests that if the commonly used tenses are introduced very quickly the learner would not be able to master them all immediately but that mastery would develop simultaneously. The learner would thus be able to integrate them from the start rather than compartmentalizing them.

It is doubtful whether introducing several tenses would overload the learner so much that a passage would cease to be comprehensive. There are many surface structure indicators of tense and mood that the learner can be taught to recognize (e.g., yesterday, tomorrow, last year, if, would, etc.). Also the learner's knowledge of the real world will help him comprehend the passage. Certain things happen usually after other things (e.g., one receive a letter after it has been written). The advantage of the early introduction of several verb tenses is that it gives the learner the ability to comprehend texts which more closely match what he considers "natural" temporal sequences.

Native language analog constructions (e.g., English--I see the dog (actor-action-object); French --Je vois le chien (actor-action-object) are useful in the early stages. The learner will at first be attempting to segment FL speech according to NL patterns, so rather than contradict his expectations, NL-analog patterns are useful to present new vocabulary
which will be, at a later date, used in introducing distinctive NP construction. One might object that reliance on NL-analog constructions in the early stages of language learning will convince the learner that the FL surface structure always matches the NL surface structure and that his task is simply to memorize enough vocabulary to replace the NL words with the FL words. On the other hand, familiar structures will build up confidence in his ability to comprehend.

2.5 THE SEQUENCING OF PRODUCTION SYNTAX

The sequencing of production syntax need not follow the order of comprehension syntax unless the two are being taught simultaneously. Experimental evidence shows that in first-language acquisition the child's learning of grammar proceeds from the simple to the more complex. Words and phrases are produced before sentences; nouns dominate verbs. Goldman's (1974) production system indicates that those syntax patterns giving direct representation of simple semantic relations (e.g., possessive, instrumental, locative prepositions, existence, predication, simple verb-object) must be learned and automatized first, before more complex syntax can be dealt with. This suggests that the learner should start with words and phrases appropriate to the context, rather than with full sentences. The first attempts at speaking should require the learner to take vocabulary items and try to construct simple phrases with a gradual build-up to simple sentences and then to complex sentences.

2.6 PRODUCTION

Should production depend heavily, at first, on pattern drills? When should the student begin to speak? The effectiveness of pattern drills to teaching the learner to speak is questionable on psychological grounds. Memory experiments such as Mehler: (1963) have shown that if a student is asked to repeat verbatim what he has heard he pays attention only to the surface features of the to be repeated string, ignoring the meaning.
In verbatim recall the semantic-syntactic computation is very limited; most of the output can be handled by echoic memory, or echoic memory plus a slight conscious transformation of a section of a sentence. The main effect of the repetition and simple substitution type of drill is to smooth out the level of phonetic sequencing and realization. The selection of vocabulary is totally bypassed; the assembly of syntactic relations is almost totally bypassed.

A large part of the difficulty of expressing oneself is the choice of the appropriate set of lexical items to convey the thought and so the learner should probably not begin speaking until he has acquired a fairly large (250-500) word vocabulary. This is not to support those who would prohibit all production during the first month or so of learning but simply to suggest that some time be spent initially on rapid vocabulary development before requiring the learner to engage in spontaneous speech in the foreign language.

3.0 CONCLUSION

In general we conclude that:

1) Memory is structured to deal with material that is meaningful, whether verbal or non-verbal. Unstructured or fragmented material, such as syllable lists, use the same encoding procedures as sentential material but require processing sequences which are more convoluted and complex. Therefore, we are not going to learn a great deal about FL performance or learning by studying memorization of unorganized or meaningless collections of items.

2) Comprehension involves decoding from linguistic forms into language-free structures in LTM. Production involves encoding from language-free LTM structures into language specific structures. The system of rules in use at any time while learning a FL specifies an interlanguage.
free memory is essentially and inextricably involved in every linguistic act.

3) From the processing point of view, a grammar is a set of procedures for encoding into, or decoding from LTM. The current models suggest that encoding and decoding grammars differ radically in the kind of processing they do and that they bear no simple relation to one another. Encoding is not a simple inversion of decoding procedures. Therefore, encoding and decoding must be assumed, at least for the present, to be largely unrelated, and must be studied separately. The fact that FL comprehension is usually more easily attainable than FL production may be attributable to the fact that comprehension grammar involves a large set of language-independent routines for inferring word and phrase meanings.

4) At every point, both encoding and decoding procedures make heavy use of the individual's autobiographical and general knowledge of the world, as well as his ability to make inferences utilizing that information. There is no syntax-based production grammar working independently of semantic content.

Even when performance appears identical, interlanguage grammar may differ radically among individuals, since there are many alternative encoding systems which can produce the same result. One person may depend on the application of grammar rules, a second on memorized rules and phrases, and a third on extensive inference and guessing to construct the correct meaning of a particular sentence.

5) Simulation experience suggests that there must be extensive interaction during both encoding and decoding between general-inferential, semantic and syntactic levels of analysis. In many ways syntactic information is the least important of the three levels. In Schank's (1972) model, decoding proceeds from left to right, by
accumulating information about semantic constraints. Syntax plays only a subsidiary role. Even in encoding, the attaching of syntactic information (i.e., word order plus inflections) to the output is only a final step.

6) Memory normally enters into language learning (as opposed to performance) through the memorization of grammar rules and/or vocabulary. Grammar rules are memorized (i.e., are processed by the same encoding routines) in the same way that any other material is memorized. Of course, such rules cannot take the form of verbal statements, paradigm sentences, tables of endings, etc. Introspection suggests that rules learned recently are utilized by a complex application procedure which is responsible for accessing the rule at the proper time being, sure the conditions for applications are met, actually "applying" the rule, and then checking to be sure that the output is correct. The functioning of an application procedure ties up consciousness, attention and thought. With repeated use, however, rule-controlled behavior sinks toward the habitual, perceptual-motor level. At the present time, no compelling model of this automatization exists in AI or any other discipline.

Since in semantic memory individual words are represented by more or less complex processes (subroutines), the same applies to vocabulary learning. Therefore, appearances to the contrary, an understanding of memory is not crucial to language learning theory. However, understanding the construction and habitualization of complex processes is essential.

Finally, a word of caution: there has been a tendency in language learning to lean heavily on models developed in other disciplines. While these models of memory are not by themselves going to solve the problems of applied psycholinguistics or those interested in language learning, they can provide a powerful and flexible descriptive framework within which we assemble, compare and relate experiment, insight and theory.
REFERENCES


ENGLISH FOR SPECIAL PURPOSES: AN ANALYSIS AND SURVEY

PETER STREVENS

ABSTRACT

English for Special Purposes (ESP) is a label which is being applied in ever more widely disparate circumstances, hence a precise definition of the term becomes increasingly difficult. This article defines the scope and nature of the teaching of English for Special Purposes. The second section traces the circumstances which led to the evolution of ESP courses and curricula. A typology of ESP courses is described in Section 3 and the salient characteristics of 'scientific English' are outlined. Section 4 discusses the four major problems which arise in ESP instruction, those related to learners, teachers, organization and assessment. Section 5 describes the 'state of the art' and the levels of ESP materials presently available.

Studies in Language Learning
Volume II, Number 1, Fall 1977
PETER STREVENS is a Fellow of Wolfson College, Cambridge University. He is the author of numerous articles and books on applied linguistics.
1.0 INTRODUCTION: DEFINITIONS

'English for Special Purposes' (ESP) is a powerful label. Very few teaching courses bore this title earlier than 1970 (though in retrospect the origins of ESP can be discerned in earlier pedagogical interest in the nature of 'Scientific English') but it is now widely used and is rapidly increasing. The explosive spread of ESP is based both on the obvious face attraction of the concept and on a reputation for relatively high success-rates for ESP compared with conventional teaching of English as a foreign language; yet the popularity of the label carries with it a danger of disillusion. Courses of instruction are being given the label ESP with little or no justification; it has become a fashion or bandwagon in some quarters, particularly among educational authorities whose antennae may pick up information about the existence of new trends without always understanding the intellectual and practical requirements for their proper introduction by the existing force of teachers. Successful ESP requires more effort and more sophisticated preparation on the part of teachers, not less. When that requirement is accepted, rates of achievement and satisfaction tend to be high; when that requirement is not realized, achievement is low and frustration creeps in.

As the label ESP comes to be used in ever more widely disparate circumstances, it becomes more difficult to define. A cline or spectrum can be observed: at one extreme are EFL courses of a conventional, general-educational kind, in which the teaching texts or the story-line
display some slight orientation towards business or some other broad area of specialisation (as when 'Mr Smith is a teacher' is replaced by 'Mr Smith is a travel agent'); at the opposite extreme are newly-designed courses for particular, identified learners with highly specific needs, where the syllabus and materials involve the selection of specialised language and/or a close restriction of the 'skills' taught (e.g. to a 'reading-only' command of a few texts in low temperature physics, or to solely the comprehension of spoken English over noisy ground-to-air radio transmissions). Almost the only universal characteristic of all ESP courses is that they do not teach 'general English': but in addition the label ESP defines a change in pedagogical perspective as well as a change in content and sequence.

This paper will consider this perspective, and others, and will trace some of the crucial connections which ESP makes with other areas of education, particularly those with developments in principles of syllabus design; then follows an analysis and typology of ESP; Section 4 discusses major problems in putting ESP into operation; Section 5 considers teaching materials for ESP; the paper concludes with a brief consideration of the way forward.

It is worth noting that although this paper is about English for special purposes, the principles adduced would be applicable, mutatis mutandis, to special-purpose teaching in any foreign language, and indeed some similar developments have already occurred in teaching French, German, Spanish, Portuguese and Russian for special (or specific) purposes. Mention will also be made of the Council of Europe project for a systems approach to language teaching, within whose framework a syllabus may be produced for any defined purpose in any given language.
2.0 PERSPECTIVE AND CONNECTIONS

ESP is a worldwide phenomenon. It moves forward in the wake of the fast-growing use of English as an international language, employed not for the purpose of spreading British or American social and cultural values but as a national link within multi-cultural, multi-lingual societies (Kachru 1976), as a vehicle for international communication, as a global carrier-wave for news, information, entertainment and administration, and as the language in which has taken place the genesis of the second industrial and scientific revolution.

These changes have produced a climate in which English is needed for a vast array of purposes and uses; a further set of global changes, taking place in education, have influenced the way in which English is taught so as to enable the learner to select and use it for his particular needs. For some years there has been a movement towards 'learner-centered instruction' and away from 'teacher-centered instruction'. This trend has led to a search for the individualisation and specialisation of instruction, in any and many forms; it demands that the teaching shall be designed to meet, to the maximum extent, the precise needs of the learner.

During the past two decades there has been an extension of the educational framework within which foreign language tuition has been available. With few exceptions, the original and universal pattern was that foreign languages were available only as an element in a general education (i.e. in school); the most able learners went on to literary, non-scientific (often anti-scientific) studies at university level. Then came a demand, in the wake of independence gained by a number of former British and French colonies, for English to be taught for practical,
communicative use. The assumption was that English would continue as part of a general education for citizenship but would be separated from the literary, social and cultural values of Britain or the United States. The third phase was reached when the need for English was expressed in terms of specific needs and special purposes, and when it began to be offered at different age-levels—that is, independently of a general school education.

A further educational influence on ESP has been the worldwide drive towards curriculum reform and the elaboration of increasingly sophisticated principles of syllabus design in language teaching. ESP cannot be fully understood except in relation to the discussion of notional, functional, rhetorical and communicative criteria for devising language teaching syllabuses.

It was noted earlier that the label ESP is applied to a range of very different events, some barely justifying the term. Similarly with criteria for ESP syllabus design: there are some courses labelled ESP in which the inclusion of some technical vocabulary (This is a test-tube replacing This is a book, for example) is the only evidence of specialization. Such minor modifications barely merit a fresh label. At the opposite end of the spectrum are ESP courses designed specifically for the needs of a closely-defined group of learners, incorporating the principles to be outlined in later sections of this paper, but within a framework of general criteria for syllabus design such as those referred to above. There is, indeed, a direct parallel between the cline of specialization for ESP and the extent of conformity with recent developments in general syllabus design for language teaching: the more
specialized the language and the more specific the learners and their needs, the more likely it is that the ESP syllabus will be constructed in the light of these sophisticated criteria.

What do these criteria imply? That the content and sequence of teaching material have been designed in conscious relation to all or most of the following:

(i) **Linguistic criteria**, controlling the language to be taught (this used to mean vocabulary counts and indices of word-frequence: now the concentration is more on authenticity and on selecting out of 'the whole of' English just that vocabulary, just those sentence patterns, expressions, paradigms, etc. as are known to be relevant to the learners concerned).

(ii) **Situational criteria**, choosing a story-line or an episodic framework which will give some verisimilitude to the presentation of language, group together vocabulary items and sentence-types in a memorable and 'natural' way, and provide motivation for sub-dividing the whole course into more manageable chunks (thus, conventional situational headings such as 'At the Post Office', 'Joe buys a new car', 'Mr. Smith's birthday'...may be replaced in ESP courses by 'The Micrometer', 'Metals and their Properties', 'Epithelial Tissue', 'Liquid Flow and Metering', 'Man Overboard!', 'Hazards of Welding', etc).

(iii) **Notional and functional criteria**. These two features are here taken together because a good deal of uncertainty and confusion attends their meaning and use. Their intention is to ensure the inclusion in a syllabus both of the necessary notions about the nature of the universe (e.g. time, quantity case and instrumentality etc:
Wilkins 1973, 1976) and of the necessary functions of language ('what we do with and through language'): imparting and seeking factual information expressing and finding out emotional attitudes, socializing, etc (van Ek 1975); asking for an explanation, apologizing (Jupp and Hodlin 1975); asking for and giving permission, asking for and giving reasons, arranging to meet someone (Abbs and Fairbairn 1975); amplification, contradiction, consequence (Johns 1975); instructions, questions, advice and confirmation, difficulties or objections, alternatives, measurement and quantities, dangers and emergencies, social communication, etc (Strevens 1977).

(iv) **Rhetorical criteria**, incorporating the linguistic devices for organizing a continuum of thought: introduction, argument, conclusion; logical consequence, alternatives, evaluation of arguments, termination; thesis - antithesis, etc (Lackstrom, Selinker and Trimble 1975; Widdowson 1974).

(v) **Communicative criteria**, showing ways in which we influence other human beings through language: signals for interrupting, for handing over the conversation to others, for changing the subject, for dominating the group, etc (Sinclair and Coulthard 1975); for switching language according to one's role, to the social need, etc (Candlin et al 1975).

Closely allied to developments in general criteria for syllabus design and also to ESP is the Council of Europe's intensive campaign for the development of a Europe-wide systems approach to language teaching, the project being under the overall charge of John L. Trim, of Cambridge University (Trim 1973; van Ek 1975; Wilkins 1973). The specification by Trim and his colleagues of a minimum 'Threshold Level' for language learning, intended for subsequent redefinition in any given language, is
accompanied by a framework of organization which similarly allows—indeed, encourages—the redefinition of precise learner needs for any and every group. In other words, both the spirit and the letter of ESP fall within the boundaries of the Council of Europe projects. Some of those who have worked with Trim also work simultaneously and independently on 'mainstream' ESP.

In tracing the connections which ESP has with other developments and in outlining a perspective for it, this section of the paper can offer only sketches of current work, but these may have served to orient ESP in relation to other important work in the learning and teaching of languages.

3.0 ANALYSIS AND TYPOLOGY

A superficial study of any collection of titles for ESP courses suggests that they differ from each other fairly obviously along a number of dimensions, e.g. (i) area of specialization (meteorology, computer programming, navigation and seamanship, elementary chemistry, etc.); (ii) restriction of language skill (from zero restriction, meaning that the aim is to achieve parity with native speakers, to 'auditory comprehension only', 'written translation only', 'reading only', etc.); (iii) specificity of language (the extent of overlap with 'everyday English', the amount of special usage and technical vocabulary, etc.); and (iv) according to a range of pedagogical variations. However, the most obvious differences are not, in the last analysis, the most illuminating. The typology offered below (based on Strevens 1977) takes account of less-visible but far-reaching distinctions.
**Distinction 1, within ALL ESP: Presence/Absence of 'Scientific English'**

All ESP courses can be distinguished in a rather fundamental way according to whether or not they incorporate the set of features which make up 'Scientific English'. (For further discussion of this, see below.) ESP courses which do make use of 'Scientific English' are often known as EST (English for Science and Technology). The distinction is a crucial one, since the teaching task, and therefore the preparation required of the teacher, to say nothing of the content and rhetoric of the texts used, is of a different order in EST courses from all other ESP.

**Distinction 2, within ALL ESP: Occupational/Educational ESP**

All ESP courses are concerned with either the language and purposes of a job (hotel manager, motor mechanic, jet engine technician, seafarer, air hostess, etc.) or the language and purposes of a field of study (geography, tropical medicine, economics, etc.). Educational ESP tends to be more academic, more abstract, less closely related to everyday actions of the learner, less pragmatic, than is occupational ESP. Students of occupational ESP are often intolerant of any teaching time not obviously geared to their job, and also of any inaccurate, non-authentic or amateur presentation of what they regard as their occupational or professional work.

**Distinction 3, within EDUCATIONAL ESP: School subject / academic discipline / teacher conversion**

ESP courses relating to school subjects and taught to school-age pupils (generally age 12-18) cover a given and restricted range of subjects, presuppose a particular intermediate stage of intellectual development, and are normally taken simultaneously with the subject studies concerned. Academic subject ESP courses, by contrast, relate to any
subject in the full academic range, assume in the learner the full intellectual power needed to grasp the subject in its maturity, and are most frequently taken as an intensive ESP course immediately before embarking on specialist university studies. (In Britain, such courses are often referred to as 'pre-technical English'; the British Council uses the label EAP 'English for Academic Purposes'.) A special case of educational ESP is seen in conversion courses for teachers, not themselves native speakers of English, to become teachers of English as a foreign language. This type of ESP course often concerns teachers from countries deliberately changing the thrust of their educational system from reliance upon a colonial language as the medium of instruction to the use of a local language; former teachers of French are then given 'conversion' courses in order to become teachers of English. Thus, ESP is used in order to bring about a switch from 'French as a second language' to 'English as a foreign language'. In some instances the teachers are already trained and experienced teachers of French; in others, they are trainee teachers, products of a French-language educational system, sent for ESP courses that combine training for their own English in the special circumstances of being an English teacher, with initial professional and methodological training.

Distinction 5, within ACADEMIC ESP: Pre-Study / In-study / Post-study

As was noted above, academic ESP courses are most often pre-study. But in-study and post-study courses also exist. In-study academic ESP may take the form of 'service courses' in English for university students of engineering, economics, chemistry, etc. Such courses are often unsatisfactory because insufficient learning/teaching time is allowed,
because the students' attention is preoccupied with their chosen academic subject, because the English course is not made obligatory (thereby reducing motivation to zero), because only in somewhat unusual and special cases are university teachers of English sympathetic to and capable of meeting the needs of students in disciplines outside English literature and philology. There is thus a marked difference between pre-study ESP (usually carried out in specialized schools other than the university of eventual study) and in-study ESP. The former are in general more successful than the latter—although, as the rare special cases attest, when highly-skilled specialist ESP teachers are employed in universities, when English is given a serious status and when sufficient class time is allowed, high levels of success can be achieved. Post-study ESP courses are less common; when they occur they tend to resemble post-experience occupational ESP courses in the well-motivated but critical attitudes of the learners.

Distinction 6; within SCHOOL SUBJECT ESP: Independent / Integrated

The contrast here is between ESP courses supplied as an adjunct to e.g. geography, or physics, or chemistry, and courses where the subject syllabus and the English syllabus are integrated into a single pedagogical programme. Such integration is extremely difficult to achieve, but when the necessary effort and skill have been devoted to the task, remarkable results have been produced. Notable examples are found in Singapore (the Singapore Primary Pilot Project: Newberry 1974) and Tanzania (Morris 1974).

The six distinctions outlined above are summarized in Diagram 1. But all ESP syllabuses, no matter where on the diagram they may be
situated, are subject to pedagogical variation according to: (a) quantity of instruction, and (b) starting level of proficiency in English. Quantity is determined by: total number of hours of instruction; intensity of teaching usually expressed in hours per week; overall duration between starting and finishing the course. The starting level of proficiency of the student determines whether the teaching must be adapted to levels of: beginner, false-beginner, intermediate or advanced student (Strevens 1977). The pedagogical variables are summarized in Diagram 2.

Diagram 1: An analysis of ESP

Diagram 2: Pedagogical variations on ESP
Scientific English

It has been stated that the use of 'technical, technological and scientific English' (Strevens 1972) makes an important contrast between EST and all other types of ESP. What is 'Scientific English', other than simply 'English used by those engaged in Science'? The following features are those which require attention in a teaching course.

Some Characteristics of Scientific English

1. **Quantifications, Formulae, Symbols.** There exist a number of rules for verbalizing, in speech and writing, numerical and algebraic quantities and expressions; this includes fractions, decimals, contractions such as cm², KHz, rms, psi; also the names of the Greek letters of the alphabet the chemical elements, etc.

2. **Greek and Latin roots and affixes.** A number of these form part of current educated usage in discourse outside science as well as within it (in-, pre-, post-; zoo-, geo-, aqua-; -ise, -ics; etc.). There remains a large body of such items that are much used in science but not at all in everyday discourse.

3. **Precise and frequent use of logical-grammatical connectors, such as if, iff, unless, whenever, consequently, etc.**

4. **Long nominal groups.** Scientific texts customarily contain nominals much longer on average than in everyday discourse. E.g.: X is defined by the limits of a central area equal to half the area of the distribution curve.

5. **Frequent Passives.** The popular opinion that passives are used by scientists in order to depersonalize their statements (the solution was filtered instead of we filtered the solution) is probably in error.
A more likely reason is that passive constructions of this type bring the subject to initial position, which in English is typically the position of the most important idea.

6. The grammar and lexis needed for the rhetoric of science—i.e. for description, analysis, argument, generalization, hypothesis, theory, etc.

7. Special lexis, varying according to the particular area of science or technology.

Reverting from Scientific English as a component of EST to the characteristics of ESP in general, some readers may be surprised that no space is devoted to methodology. ESP itself is not a methodology, and ESP courses and materials provide examples of almost every possible methodology and technique. ESP is singularly free, also, from controversy over methodology. This doubtless reflects the close relation between ESP and applied linguistics: it is a tenet of applied linguistics that the idea of a unique 'best' methodology is a chimera, that every different learning/teaching situation requires its own analysis and its own solution, and that methodology is a variable for this purpose (Allen and Corder 1973; Strevens 1977).

Finally in this section on the analysis and typology of ESP, it is commonly observed that ESP courses tend to suit older students, are of shorter duration and lower total quantity of instruction yet run at higher rates of intensity, achieve higher levels of satisfaction for learners and teachers, reach adequate levels of performance but rarely if ever seek to approach native-like levels of achievement.

4.0 PROBLEMS

Four types of problems arise in ESP, relating to learners, teachers, organization, and assessment.
(i) ESP learners. On the whole, ESP is taught to learners who are cooperative because they are aware of the benefits of success and are grateful not to be subjected to the long and irrelevant haul of a general-purpose English course. Usually, they have acquiesced in a statement of their special purposes and accept the teaching as being a response thereto. But it can happen that learners change their aims during their ESP course. Sometimes this reflects an inadequate job-analysis, as when an ESP for 'engineering' course is presented, the teaching incorporates texts from civil engineering, and the students then complain that they are in fact high-energy electrical engineers, uninterested in sewage disposal or road building. Much more serious is the case where the student's aims change because his own early success in the unaccustomed business of language learning alters his view of his own potentialities—e.g. the engineer who seeks a course in ESP for civil engineering, then switches to a demand for 'general-purpose' English in order that he may read English language newspapers, listen to the radio, converse in English with the opposite sex, and so forth. This problem is the responsibility of the organizers and teachers of ESP, who need to take especial care in analyzing the learners' needs and should always preface their teaching by a clear indication to the learners of what they can and cannot expect to achieve. Indeed, the necessary cherishment of the learner and the need to monitor his attitudes as well as his progress are just as important in ESP as in other forms of EFL.

(ii) ESP teachers. For a great many teachers, the prospect of teaching ESP (and particularly EST) is a daunting one. (In Britain in 1976 an EFL teacher dismissed for refusing to teach an ESP course sued
the employer for wrongful dismissal, and won.) Most teachers of English have been trained in the humanities; most teachers of any subject find it hard to teach courses with unfamiliar aims and objectives. In particular, many teachers of English fear—unnecessarily—that in order to teach ESP they have to become specialists in the same subjects as their ESP students. Not so. The ESP teacher is not, and should not be expected to be, a teacher of the speciality (though collaboration between subject specialists and EFL specialists is a valuable approach, and the teacher who combines in his own personal training the speciality and EFL professionalism is in the very best position to succeed). But the ESP teacher must come to terms with the existence of an unfamiliar universe of discourse within which he or she must now perform his teaching duties. There are two prerequisites for successful ESP teaching. First, the teacher must be highly skilled, preferably with specialist training, for instance in applied linguistics, sufficient to enable him to tackle ESP teaching from strength, certainly not from weakness. Second, he or she must regard every fresh ESP course as an interesting and totally surmountable professional challenge, to be met with energy, enthusiasm and high expectations. The energy must extend to a willingness to construct his own materials since it is unlikely that suitable texts and textbooks already exist. ESP is not for the weak teacher, nor for the person who is antagonistic towards teaching anything except literature. He does not need to be a scientist: he does need to be willing to consort and communicate with scientists.
(iii) **Organization.** Much of the earliest pioneering work in ESP originated in the United States with English Language Services, Inc., under Edwin T. Cornelius, Jr., whose occupation-oriented textbooks (the Special English series) formed the first major set of ESP publications. The work of Selinker, Trimble and Lackstrom continues and extends the American contribution. In Britain there have been three main strands of development. (a) The establishment in 1969 of the Colchester English Study Centre (CESC), the first UK school specializing solely in ESP, and of its sister organization, the English Language Teaching Development Unit (ELTDU) of the Oxford University Press: these two bodies have amassed great experience in devising ESP courses, and by the excellence of their standards have shown learners and teachers alike what can be achieved (Currie and Sturtridge 1972; Webb 1975). The Director of CESC (Webb: private communication) summarized their 1976 courses thus: '**Medicine:** doctors, medical students, medical administrators. **Aviation:** pilots, technicians, engineers, cabin crew, air traffic controllers. **Education:** teachers of EFL, heads of department, inspectors, teacher-trainers, materials writers. **Technological and Technical:** engineers (power), technicians (telecommunications), craftsmen (auto and electrical fitters), technical instructors, fire officers. **Commerce and Industry:** executives, economists, trade union officials. **Foreign Service:** diplomats, international administrators. **Communications:** journalists, TV producers....' The lead of CESC has been followed by a small number of other private schools offering ESP either as the sole type of course or as one of several types of EFL. (b) Secondly, the leading British centres of applied linguistics (Edinburgh, Essex, Lancaster, Birmingham, Reading,
Leeds, Manchester) have been directly involved not only in university studies but also in practical ESP teaching projects in Britain and overseas. (c) The specialist ESP schools such as CESC have always made use of the personal services of leading university ESP experts, as consultants and advisers, teachers and examiners. As a result, ESP teaching in Britain has remained very closely in touch with intellectual developments, to the benefit of all concerned. It is rare, in language teaching, to find so little distance and dilution between academic study and classroom practice as there is in ESP in Britain.

(iv) Assessment. It remains a major shortcoming of ESP that very little work has been done to devise fresh methods of testing, examining and assessment that match the new courses of training. ESP teachers combine in rejecting as unsuitable virtually all of the many existing tests and examinations in EFL (British Council 1976). A beginning has been made by the ELTDU English Language Stages of Attainment Scale (ELTDU 1975, 1976) but much further development is required.

5.0 MATERIALS

The principal drawback is that there are insufficient appropriate ESP teaching materials. The main British EFL publishers have embarked on large-scale programmes for ESP; initially, two features seem to be widely shared: (i) the materials tend to concentrate on the 'pre-technical' student (academic, pre-experience), and (ii) the new ESP publications give an emphasis to the written language, especially in the form of detailed work on the comprehension of technical and scientific texts, that has long been absent from conventional EFL materials. The English Studies Series and the highly sophisticated Focus series, together with
the exciting audio-visual course **The Ballcrest File** (produced in conjunction with the BBC), all published by Oxford University Press, provide a number of useful volumes: from Longman, the **Nucleus** series, from Collier Macmillan and English Language Services the **Special English** series, from the BBC several radio courses, perform a similar function. There are in addition many separate titles, existing and forthcoming, from these and other publishers. The main publishers are responding to the acute shortage of materials. Nevertheless for a considerable time ahead the ESP teacher must expect that only a small part of his textbook requirements will be met from existing publications. Very frequently he will have to prepare most of his requirements from his own resources.

6.0 OUTLOOK AND CONCLUSION

ESP is a young but rapidly expanding branch of TEFL. Given the application of the maximum sophistication of which the language teaching profession is now capable, particularly in the realm of syllabus design, and given teachers of high skill and intelligence, excellent results are achieved. There is every expectation that demands for ESP will continue to grow rapidly, and it is not unlikely that the fairly spectacular achievements of successful ESP, when contrasted with the disappointing achievements of long-term, low-intensity, general English courses at school level, may lead to a re-appraisal of these latter and perhaps to radical steps being taken to root out low-yield language teaching and to apply instead the lessons which can be learned from special-purpose teaching.
REFERENCES AND SELECT BIBLIOGRAPHY

Books and Articles


Series of ESP Textbooks


Titles: English in Physical Science; English in Mechanical Engineering; English in Workshop Practice; English in Basic Medical Science; English in Education; English in Social Studies; English in Agriculture. Oxford University Press. London.

Bates, M., and T. Dudley-Evans (Series Editors). Nucleus: English for Science and Technology. Forthcoming titles: General Science; Biology; Agriculture; Engineering; Chemistry; Geology; Mathematics; Physics; Medicine; Nursing Science.
English Language Services (for U.S. titles), Peter Strevens (for UK titles) Series Editors): Special English. Titles:

US: Agriculture; Aviation; Banking; Engineering; International Trade; Journalism; Medicine; Hotel Personnel; Tourism; Business;

UK: Air Travel; British Banking; British Banking Overseas; Computers; Computer Programming; Department Store; Import/Export; The Jet Engine; Legal Problems; Marketing Petroleum Products; The Motor Car; Nursing; Office Practice; Seafaring.

Mackin, R. (Series Editor). English Studies Series. Titles: History, Sociology, Politics, Economics, Law; Anthropology, Psychology, Education, Language, Philosophy; Physics, Mathematics, Biology and Applied Science; Liberal Studies; Military Texts; Chemistry; Language Teaching Texts; General Engineering Texts; Agriculture; Geography. Oxford University Press. London.
TRENDS AND ISSUES IN TEACHING FRENCH TO MIGRANT WORKERS

GEORGES ZASK

ABSTRACT

The teaching of immigrant workers has developed considerably during the past five years. A first observation is that the methods of teaching French as a foreign language to other clienteles are not applicable. It appears that, even with modifications (choice of better dialogue situations), it is the methodology of teaching French as a foreign language itself which is inadequate, mainly because language teaching is merely one of the components of the training of migrant workers: it is not a goal, but rather a means of access to professional preparation. It is therefore necessary to combine language training and professional training, and a "pedagogy of the technical object" seems to be one of the most productive means of access to this new type of learning.

Studies in Language Learning
Volume II, Number 1, Fall 1977
GEORGE ZASK is the Director of the Centre de Linguistique Appliquée at the Université de Franche-Comté-Besançon.
There is no possibility of treating or even bringing up, in the framework of an article, all the problems which the teaching/learning of immigrant workers poses: problems of a quite diverse nature which involve the fields of ethnology, sociology, psychology and linguistics. One cannot, however, avoid some reflections on the actual situation of the migrant worker, on the objectives of language instruction: to adapt, to assimilate, to integrate into the receiving environment. But, if so, what happens to cultural pluralism, to mutual influence to the role which French plays with regard to the mother tongue (at home, for example, with children who are attending school)? Any reflection will sooner or later end up with politics: Why these workers? What is their role in the economy? Is it desirable that they speak French? Do we wish to have their professional qualifications increased? As a proof of this influence, let me cite one among many: the economic crisis caused the government to suspend immigration by law in July, 1974. The foreigners who are now in France (four million, of which 1.9 million are active), therefore, arrived at least two and a half years ago. In some way or another, they have been exposed to French and are in no way beginners. The influence of this situation on the teaching of French is obvious. Most of the methods which have been developed obviously do not fit.

These questions, which are not treated here, nevertheless constitute the background, ever present, which gives true meaning to a few reflections which I have been led to make.
The relatively recent experience of the Center for Applied Linguistics at the University of Besançon will enable us to see how new tendencies have appeared over the past few years and what the perspectives are at present.

Let us at first try to place our field in perspective. Teaching migrant workers is often called "alphabetisation" (teaching the three R's, teaching for functional literacy). Under this term is subsumed all basic instruction intended for immigrants. In reality, the term alphabetisation designates the learning by adults of reading, writing and the rudiments of arithmetic. It is clear that the alphabetisation of immigrants to France is a double task, including also the learning of French as a foreign language.

"Nevertheless, the adults in question are not all illiterates. According to the nature of their need for training in French, they may be classed into five groups:

1) Persons not speaking French and not schooled in their own language;  
2) Persons able to communicate in spoken French but not schooled (neither in French nor in their own language);  
3) Persons able to communicate in spoken French and schooled only in their own language;  
4) Persons not speaking French but schooled in their own language;  
5) Persons able to communicate more or less in both written and spoken French."

To this must be added a distinction, for those who are literate, between languages which use a Latin alphabet and others (e.g., Arabic or cyrillic alphabet).
The first team which worked on this problem at the Center for Applied Linguistics, beginning in 1971, did not succeed in taking into account all these variables, but the method which was developed meets modern conceptions of language instruction of the period, with their well-known principles:

--spoken French method,
--audio-visual method,
--universal method, that is, not designed for a particular nationality,
--method in which grammatical work is implicit: one first learns to manipulate constructions;
--method based on Basic French: this permits one to acquire a minimum baggage from the point of view of vocabulary, phonetics and grammatical constructions. "The elements are ordered according to a certain progression. Here different criteria come up: the frequency of elements, their use, the internal cohesiveness of the phonological and grammatical systems of French..."

As to the pedagogic sequence, it also has nothing original about it:

"The sequence, which is designed to bring about the acquisition of mastery of these elements, is based on common sense. The elements must at first be presented to the students. They will then be gathered together into a base text mixed with elements already known. This base text is in general a dialogue, but towards the end of the course, it may be a text (letter, newspaper article, etc.). After having presented these elements, one must explain them so that their meaning is clear. Then one must make sure that the students are able to repeat them correctly, which leads logically into making a lesson on this or that difficulty of French phonology, by approaching it in a more systematic and ordered fashion, by carrying out actual phonetic training. Finally, the monitor must make sure that the basic text has been sufficiently memorized that the new elements may be easily reused, and actually assimilated when they are fixed by the use of systematic exercises. But definitive acquisition will only result when the students are able to reuse the new elements in real discussions, and when, finally, the elements are reintroduced in the following lessons, when they are reviewed, and when they are mastered on the level of reading and writing."
But then how does this material differ from other pedagogical devices which are on the market and which claim the same principles? Where does one find taken into account the specific problems of immigrant workers?

The preface is explicit:

"This is a method intended for foreign workers. That is to say, it is centered on the problems of the worker's world: working conditions, salary, safety, transport, work conflicts, union, hiring... on the problems of the immigrant worker: residence card, work contract, immigration laws, social security, family allotments, national immigration office, trips to the supermarket, looking for a place in the big city, betting, etc... on problems of immigration: racial discrimination, clandestine immigration, life in the country, reasons for immigration, living conditions."

That is, it is in the choice of situations, of people and of the themes taken up that the method has specificity. The people in the situations are almost always French workers and especially foreigners. Their daily life brings them to the factory, the garage, the workyard, to their bare room, with, as a place of social exchange, the café. To be sure, they have some commercial and civil dealings with the environment which surrounds them: the employee at the police station, the policemen, the social security office, the hospital, the dispensary and the grocer, the market. They take the bus and the train station and the place where one arrives from home, the place where one departs for home, and the place where one waits for family or friends play an important role in their life. The post office is also ever present, for it is there that one sends the money orders which enable the family which has remained at home to subsist.

Life is hard; the people are tired; often poorly paid; distractions, with the exception of the café and the races, are rare.

Actually, CLAB-Alpha, method of spoken French for foreign workers, offers to the latter a mirror in which they will recognize that which forms the fabric of their daily life. As far as the language is concerned,
the raison d'être of the method, one has chosen, quite rightly it seems, a familiar and popular French, not slangy, sociologically congruent to the situational contexts and the people involved.

The dialogue of Book 4 may be taken as an example:

Persons:

-- _Fernando_, a Portuguese who works in a garage

--Bachir

--Jean-Pierre

Situation:

--Jean-Pierre and Bachir are still in the café. Fernando arrives.

He is tired.

Dialogue:

--Jean-Pierre:  — Ah! Voilà Fernando! (Ah, here's Fernando!)

(à Fernando) salut!  (to Fernando: hey!)

--Bachir:  — Tu es fatigué, hein? (You're tired, I'll bet.)

--Fernando:  — Oui.  (I sure am.)

--Jean-Pierre:  — Tu travailles beaucoup? (Do you work hard?)

--Fernando:  — Tu sais, dans un garage, c'est dur.

(You know, in a garage, it's hard.)

--Jean-Pierre:  — Tiens! Tu travailles dans un garage maintenant?

(Gee! Are you working in a garage now?)

--Fernando:  — Oui  (Yes)

--Bachir:  — C'est un grand garage? (Is it a big garage?)

--Fernando:  — Bien sûr, c'est le garage Dupont.

(It certainly is, it's the Dupont Garage.)

A certain number of indications, however, point to the subjects which will be taken up later and reveal, in an intuitive fashion, the tendencies
which are directing at the present time our research in the field of language pedagogy. Let me cite some:

--work on the rhythm and intonation more than on phonemes;
--taking into account "false beginners" by proposing a non-linear use of the lessons by moving from one book to the other according to the errors noted during the course;
--systematic employment of actual documents (excerpts from newspapers, recording from the radio, little announcements) intended to create or keep up motivation and to form points of departure for arguments and discussions in which the learner involves himself personally.

Recent research done under the aegis of the European Council and summarized essentially in two publications enables us, for the teaching of migrant workers, to systematize what was already known by practitioners and to develop better adapted types of materials.

The first problem is more clearly to take into account the clientele envisaged, its knowledge of French, its motivations, its needs. One will see that the various groups of immigrants (Algerians, Portuguese, Turks, Yugoslavs, Moroccans, Spanish) do not have the same attitude towards the language. Their immigration is more or less recent. They are alone or with their families; they intend to stay in France or return home; they form a coherent community or do not.

A short study made recently of Turkish workers in the region around Besançon reveals a number of things: These workers, having been in France for more than three years, are "false beginners", and it is less necessary to teach them vocabulary and basic structures than it is to "correct" their language, learned in the real life situation and poorly mastered. Never-
theless, the variety of French which they use is quite well adapted to most of the communication situations in which they find themselves: factory, workyard, home, café. Even if these immigrant workers feel that their French is incorrect, they judge on the one hand that it is proper to their social status ("we are not bosses!"), and on the other they are proud of their knowledge and look at the effort that they have had to expend to gain it.

Once they are in a language course, one must take into account these elements

1. Use what has already been acquired

2. Do not try, in the spoken idiom, to teach a standard French, which is almost of no value, because the worker feels that he belongs to a certain world in which standard French has no currency

3. Attempt an approach to writing - reading/writing - (which presupposes a certain knowledge of standard French) which is not traumatizing in that it rejects that which has already been learned

4. This means that one is not going to "correct" the system which has been acquired, but rather superimpose upon it another system which is proper to reading/writing and which is not presented in terms of being the norm ("good French) but as a different variety to be used in other types of communication situations.

To be sure, there is nothing original in this, except perhaps the recognition of the adequacy of a certain popular French for the needs of
oral communication and its efficacy in particular as the sign of integration into a certain sociological group.5

Another interesting point made clear by the research done under the aegis of the European Council: the analysis of language needs. The particular category of learners to which immigrant workers belong has different language needs than that of tourists, for example, or even business men. The determination of these needs will permit a more precise definition of the objectives and of the content of a program or a language course. According to the clientele envisaged, "a selection must be made of utterances and concepts, as well as of the list of their linguistic realizations."6

The European Council's study defines 5 types of clientele and 5 areas of relations. For each clientele, each area is more or less pertinent. Figure 1, drawn up by Roulet, clearly illustrates this classification.

A second investigation of Turkish workers in the region around Besançon, using types of questionnaires made up by Richterich, reveals the language needs of these workers and the communication situations, in which French is or ought to be used.7

It is, to be sure, at work (with bosses - with colleagues) and in the realm of spoken language where the need is most felt. At home one speaks the mother tongue. Exposure to audio-visual media (radio, television, movies) is minimal, exposure to written media (newspaper) is non-existent.

Social relationships (friends, neighbors) are almost non-existent. This is perhaps due to the particular type of community which we studied: Turks living in a fixed milieu for social, psychological and religious reasons.
<table>
<thead>
<tr>
<th></th>
<th>tourists, travellers</th>
<th>workers, migrants and families</th>
<th>specialists, professionals in their home country</th>
<th>adolescents in the school system</th>
<th>older adolescents, young adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>family relationships</td>
<td>-</td>
<td>~</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>professional relationships</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>~</td>
<td>+</td>
</tr>
<tr>
<td>social interaction</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>~</td>
<td>+</td>
</tr>
<tr>
<td>commercial and civil interaction</td>
<td>++</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>~</td>
</tr>
<tr>
<td>access to media</td>
<td>~</td>
<td>~</td>
<td>~</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

relevance: weak: - , probable: ~ , important: + , essential: ++
As to commercial and civil relationships, these are necessary (story, post office, restaurant), but, strangely enough, the need for using writing in these relationships (social security, family allotments, letters) is not felt very strongly, for there is an entire system of mutual official aid which permits one to resolve these administrative problems by using a compatriot who knows French.

These results, incomplete as they are, confirm de Roulet's table and permit us, by pushing further the analysis of needs and of communication situations, to sketch the bases of what might be chosen as instructional objectives.

The other direction which research in this area is taking at present is not basically different. It only takes as a point of departure another type of question and especially a deeper reflection on the real needs of migrant workers. One must remember that these migrants are above all workers, and it is necessary to participate in their training. Language is only one aspect of this training. For a long time we thought that this aspect was primary and that it had to be resolved before taking up the problem of professional training. For several years, for reasons which are often quite different, many authorities have been insisting on the necessity for such training, and the close ties with language have been noted. The conference on literacy convened at Tehran in 1975 speaks of a "functional literacy" which connects literacy and the learning of an industrial profession or agricultural techniques. In 1976 Pope Paul VI, receiving Mr. M'bou, the General Secretary of UNESCO, declared that literacy was necessary for migrants in order "to permit them to participate fully, at first in their own original culture, then in order to enter into the social and professional life of the host country." Also in
1976, Mr. Dijoud, Secrétaire d'Etat for immigrant workers declared that one had to go further than language: we must move towards a basic technological culture by taking as our point of departure the mastery of the tool and the machine.

One could continue piling up such declarations. Indeed, this is the reflection of a change which has come about in the last few years in the area of literacy training. We have finally taken into account that language is not the only obstacle to the social assimilation of migrants. In fact, to come to France is not only to encounter a different linguistic and social universe, but also a different technical work where the machine has replaced the simple tool. Thus, the assimilation into the host country takes place of necessity through the discovery, the analysis and the mastery of technical phenomena. In addition, the migrants, if one asks them, reveal very clearly a demand for professional training. If that is the end result of training, how can we combine general education (language, arithmetic) and professional elements? One of the most obvious things noticed by teachers is that a great number of difficulties encountered by the workers in the course of their learning are not linguistic in nature.

The perception of space, for example, has already been the object of several studies (Ferenczi 1966). The use of visual elements, either in a language course or in the workshop, is not without its problems:

-- caused by the comprehension of images (decoding of conventional signs) and the relationships to be established between them in order to understand a situation when it is presented by the use of a series of images;
the identification of the same element (person, object, place) in a series of pictures is difficult if one changes the scale (movement from a large scale map to a smaller scale, for example).

An example of poor decoding of pictures and the text accompanying them connected with a safety sign: In a factory, a poster shows a worker running down a stairs. The text says: "NO! Walk slowly," but the worker understands: "You must work rapidly." Even if these texts are translated into the mother language or languages of the migrants, one must not forget that a large number of them are illiterate. There is also the problem posed by the difficulty of applying logic not only to elementary arithmetic but also to the understanding of simple physical or mechanical phenomena.

All of these has led the C.A.L. to set up a research team which has taken as its objective the outlining of a pedagogy of the technical object. In fact, we take two observations as our point of departure:

1. Work situations are both communication situations and social situations. The migrant in fact, although he is a foreigner, is also a worker.

2. The communication situation focusing on the technical object facilitates the acquisition and the reinforcement of syntactic structures of French more than any other type of exercise connected with French as a foreign language.

We shall try to show briefly the nature of the problems which come up in practice. The situations of professional life are not directly accessible to the immigrant, especially if he is illiterate. "To apprehend them, to come to an understanding of them, implies a whole set of conceptual procedures which are not familiar to the immigrant. The smallest technical
operation (putting in a bolt, taking out a bolt, use of a key, a pliers, a screwdriver, etc.) is the result of the application of a certain number of mathematical and physical laws. To arrive at the understanding of these small technical operations implies a minimum knowledge of these laws.

If one wishes then to take professional life situations as the major communication situations, it is first necessary to reflect on the relations which exist between things, linguistic and things technical. These relations are close: the learning of a language requires, among other things, the acquisition of certain logical processes which can be acquired in other activities, such as technical work. Conversely, this last type of activity brings to bear a number of logical processes which are precisely applicable to the understanding of the function of a language and facilitate its acquisition. A learning sequence could therefore be set up as a function of these logical processes revealed in the language and in other operations of a technological nature.

As a parallel to our reflections on this point, the learning situation also appears to be important, the relation teacher/taught in its socio-logical and institutional aspects. Here too, the act of communicating focused on a technical object seems to be favorable, for the pedagogical attitude is changed; one is no longer in the "pupil" situation in which the teacher appears as the sole possessor of information. One takes as a point of departure what the learners know how to do and not their ignorance. Moreover, in the workshop where one holds such a class, one can manipulate things, move around, speak while learning. For example, to measure planks to make a table (this table will be of use in the worker's room)—make a lamp with a shade, a base, some electric wire, plugs or—
mount a two-way electric switch which, taken home, will add an element of comfort. Both on the logical level (reversibility of measures) and on the linguistic level (comparatives, demonstratives, personal pronouns) one sees immediately, that this situation is more motivating and better adapted than a scene in the railroad station, the post office or the grocery store.

In resumé, and repeating the point that this pedagogy of the technical object is still on the experimental level, the interest of the procedure can be summed up as follows:

-- It is based on the desire for professional qualification and social advancement.

-- It is thus conceived as a preprofessional stage in a course of professional training.

-- It is tied to the work life and the daily life of the students. It permits one to take into consideration attainments ("know-how" or explicit knowledge) and to take as a point of departure what the students know or know how to do themselves, and not their supposed "ignorance."

-- It does not put adults back into a pupil situation which is regressive with regard to their adult social life.

-- It is a pedagogy based on collective research.

Let us say in conclusion that at present it is a question in the training of immigrant workers of transcending the simple learning of the language, even when this incorporates modern research in the area of communication situations, language needs, and the level/threshold problem.

When the training of immigrant workers is not based on a simple transposition of the school situation, it must, sometime or other,
involve itself with questions which are presently being asked in the training of adults in general and more specifically the training of workers who are on a low level of qualification. These questions are not restricted to France, but are shared by all industrial or industrializing countries.

FOOTNOTES

1 More general information is furnished by the B.E.L.C. Centre de documentation pour la formation des travailleurs migrants, 4, rue de Stockholm - 75008 PARIS and the periodical which it publishes: "Migrants formation."

2 Jean Poilroux, Migrants formation, No. 1 (October, 1973).

3 Clab-alpha. Méthode de français oral pour travailleurs étrangers, M.A. Cammaritta, C. Cesco, P. Chiron, D. Duprey.

4 Preface of Cammarotta, Cesco, Chiron, Duprey.

5 The investigation was done by a Turkish student of the Linguistic Department, H. Yürütten.

6 E. Roulet, Un niveau - seuil: Présentation et guide d'emploi; European Council (Strassburg, 1977).


8 Faldos, E. del Carpio, "Aides visuelles et formation des travailleurs immigrés," Migrants formation, No. 8.

9 Project C.L.A. sur la pédagogie de l'objet technique.

REFERENCES


Rapport final des structures d'études. 2ème édition 1975. Centre de Linguistique Appliquée de l'Université de Besançon.


THE TEACHING OF LANGUAGES FOR SPECIAL PURPOSES:
A SELECT BIBLIOGRAPHY

J RONAYNE COWAN
RASIO DUNATOV
KARL J. FINK

Abstract

This bibliography covers the teaching of languages for special purposes. The first section is devoted almost exclusively to articles on the teaching of "English for Special Purposes." The following section, on Russian, contains literature on Russian special register courses for foreigners, and the final section lists articles on German special register courses and word frequency counts for German.

Studies in Language Learning
Volume II, Number I, Fall 1977
SELECTED BIBLIOGRAPHY OF LITERATURE
PERTAINING TO THE TEACHING OF ENGLISH
FOR SPECIAL PURPOSES

Allen, J. P. B., and H. G. Widdowson. 1974. Teaching the communicative use
of English. IRAL, 12. 1. 1-22.

10th Regional Seminar, RELC.

69-72.

program design. Paper presented at the 2nd Regional Conference on
English for Special Purposes, Isfahan, Iran.


Baly, T. J. C. 1968. Report on an English language matriculation course
for post matriculation science students. Government College (Lahore).

Barber, C. L. 1962. Some measurable characteristics of modern scientific
prose. Contributions to English Syntax and Philology eds. Almquist
and Wiksell (Stockholm). 21-43

_______. 1961. The vocabulary and verb forms of modern scientific English:
a preliminary investigation. Venture (Karachi) 2.1. 5-19; summarized in
English Teaching Abstracts. 55.

Bares, J. 1969. Semantic features of quantitative prefixes in technical
English. Philologia Pragensia (Prague) 12. 3. 152-8; summarized in
Language Teaching Abstracts 70-102.

40. 22-4; summarized in English Teaching Abstracts 505.

in the Middle East and North Africa (ESPMENA) Bulletin 3. 22-23.

Bartolic, L. 1962. English for engineering.. English Language Teaching.
17. 1. 39-42.

relation as applied to a diagram. English Language Teaching 2.2. 156-63.


Catford, J. C. 1950. The background and origins of basic English. English Language Teaching 5. 2. 36-47.


______.and S. K. Ayer. 1975. Constructing and teaching an ESP Programme. 10th Regional Seminar, RELC.


Cooper, M. D. 1970. Language roles in the study of science. ELT Documents 2 2-10.


Davison, I. 1950. The basic English foundation. English Language Teaching 3.1. 24-5.


Dudley-Evans, A. 1975. The ESP materials of the university of Azarabodegan, Tabriz, Iran. 10th Regional Seminar, RELC.


Ellis, M., and T. Kirk. 1976. AIT reading and writing programme: rationale and example units. AIT. mimeo.


Ever, J. 1975. Teaching English for science and technology: the specialized training of teachers and program organizers. 10th Regional Seminar, RELC.


__________. 1971. Further notes on developing an English programme for students of science and technology. English Language Teaching 21. 3. 221-229.


Farrokhpay, M. 1969. Scientific English for Iranian students. TEFL (Beruit) 3. 3. 1-3. (Summarized in Language Teaching Abstracts 70. 357.)


________. 1957. The problem of vocabulary in the popularization of science. Education Monographs 2 eds. Oliver and Boyd University of Birmingham, Institute of Education.


________. 1950. A limited vocabulary for scientific and technical ideas: 2. English Language Teaching 4. 5. 128-137.


_________. 1965. English in the industrial workshop. IRAL 3. 4. 267-76


Grauberg, W. 1971. A language laboratory course to teach German to chemists. Science and Technology in a Second Language: Center for Information on Language Teaching and Research (CILT) Reports and Papers 7. 73-77.


Henley, A. 1975. English language in hospital. Language-Teaching and Community Relations 2. 2. 3-5.


Jones, K. and A. Mountford. 1974. The role of discourse analysis in devising undergraduate reading in EST. 9th Regional Seminar, RELC.


Lyne, A. A. 1975. A word-frequency count of French business correspondence based on approximately 80,000 running words. IRAL 13. 2. 95-110.


Mackay, R. 1974. Teaching the information-gathering skills. RELC Journal 5. 2.


Mountford, A. 1975. The notion of simplification and its relevance to materials preparation for EST. 10th Regional Seminar, RELC.


Strevens, P. 1971. The medium of instruction (mother tongue/second language) and the formation of scientific concepts. IRAL 9. 3. 267-74.

________. 1971. Alternatives to daffodils; or scientist though never wert. CILT Reports and Papers 7. 7-11.

________. 1973. Problems of language in teaching English overseas. The teaching of physics at the elementary level. English Language Teaching Journal 27. 3.

________. 1973. Technical, technological and scientific English (TTSE). English Language Teaching 27. 3. 223-34.


Tickoo, M. L. 1975. Theories and materials in EST: a view from Hyderabad. 10th Regional Seminar, RELC.


Ure, J. 1969. Practical registers (A and B). English Language Teaching 2. 3. 2-3.


Wardhaugh, R. 1974. Reading technical prose. 9th Regional Seminar. RELC.


________. 1971. The teaching of rhetoric to students of science and technology. CILT Reports and Papers 7. 31-41.


Wijasuriya, B. 1975. English for science and technology and the classroom. 10th Regional Seminar, RELC.


I. General Methodology and Bibliographies


Ocherki po metodike prepodavania russkogo iazyka inostrantsam (Pedagogical Articles on Teaching Russian to Foreigners). Moscow: Patrice Lumumba University.


V pomoshch' prepodavateliam russkogo iazyka kak inostrannogo (Aids for Teachers of Russian as a Foreign Language). 1964 [part 1], 1965 [part 2]). Moscow: M. G. U.

II. Special Register Textbooks and Readers


III. Special Dictionaries

Levitskii, V. V. 1966. Chastotnyi slovar' iazyka uchebnykh posobii medinstituta, 1-yi semestr (Word Count of First Semester Medical Textbooks). Moscow: M. G. U.


SELECTED BIBLIOGRAPHY OF LITERATURE ON GERMAN SPECIAL REGISTER COURSES AND WORD FREQUENCY COUNTS FOR GERMAN

I. German Language Dictionaries


II. German Language Frequency Counts


Butler, C. S. 1975. Syntactic analysis of German chemical texts: on constructing a short course in German for chemists. IRAL 13. 4. 320-326.


Hauch, Edward F. 1929. German Idiom list. selected on the Basis of frequency and range of occurrence. New York: Macmillan.


Schinnerer, Otto P. and H. G. Wendt. 1933. A Suggested list of 1000 active German words. German Quarterly. 8. 77-90.


Reviewed by J. R. Cowan, University of Illinois

The preface states that this new edition was undertaken to present certain fundamental changes in the views of language acquisition which have arisen in the course of the past five years. To this purpose the author has substantially expanded the treatment of linguistic theory, which continues to exercise such a strong influence on research in this field, as well as the reports of empirical studies contained in the earlier edition. Several new sections on sign language, the relationship of language development to cognition and normative tests based on language performance have also been added. The result is an impressive overview of the many facets of language development studied to date. The book will interest beginners; and many an expert, be he or she linguist, psychologist, or educator, will find new areas to explore. None of the latter group will be entirely satisfied with the treatment given to his or her speciality vis-à-vis language development (the so-called 'neurolinguists' will probably receive the greatest disappointment), but the scope of the book is undeniably broad for an introductory text, and directions for obtaining a more detailed knowledge of a given topic are clearly indicated.

A six-page introduction sketches the historical interest in child language acquisition and imparts two fundamental Chomsky-derived insights
which have almost become clichés by now—that (1) the process of learning
one's own language may be likened to the task of a linguist in that the
child must construct a grammar from the data presented to him in the
form of adult sentences, and that (2) the successful completion of this
task apparently entails hypothesis-testing strategies. This is followed
by Chapter 1, which consists of a short but nonetheless cogent discussion
of the emergence of single words and the possible factors which might ex-
plain why the child focuses his attention on the enormous number of them
which he or she is bombarded with.

Chapter 2 is devoted to the most extensively studied 'stage' of
child grammar, the two-word utterance. The early concern with writing
'pivot-open' grammars, which characterized the early 1960's is discussed,
and many of the subsequent revisions demonstrating the unrevealing nature
of these grammars which were necessitated by the observations of re-
searchers like Bloom, Bowerman, and Schlesinger are mentioned. The pro-
cedure for computing mean length utterance (MLU) and the rationale for
using this measure for comparison purposes in child language studies is
introduced as a preface to discussing Brown's (1973) classic longitudinal
study of the acquisition of speech in three of the most famous anonymous
subjects in behaviorist literature—the Harvard children, Adam, Eve, and
Sarah. The chapter concludes with a discussion of the one undisputed
process evidenced in child language, over-regularization.

One of the few shortcomings of this book is to be found in Dale's
discussion in Chapter 2 of Roger Brown's attempt to account for the almost
invariant order of acquisition of the morphemes which he studied in the
data produced by Adam, Eve, and Sarah. In seeking to explain this phenome-
non, Brown resorted to a tactic which many a psycholinguist has found
appealing: he invoked the formalism of the most accepted version of
linguistic theory to develop the principle of 'cumulative complexity'.
This principle endows grammatical transformations postulated in the gram-
mar proposed by Jacobs and Rosenbaum (1968) with some measure of psycho-
logical reality. Morphemes acquired earlier always entail at least one
transformation less than those morphemes which came under the child's
command at a later date. Dale's description of this principle is aided by
a table (pp. 32-33) which he has compiled from various portions of Brown's
book, but I suspect that readers who are unfamiliar with the format of
transformational grammar as it appears in Jacobs and Rosenbaum will not
fully grasp what Brown has in mind.

A far more important problem is the possibility that readers who have
not been exposed to this field may, after reading Dale's description of
Brown's conclusions, be unwittingly led to believe that an explanation like
cumulative complexity actually contains some scientific validity. Dale's
discussion tends to create this impression by remarking on the uniqueness
of the order found by Brown, and the fact that it has an extremely high
correlation with the de Villiers and de Villiers (1973) cross-sectional
study. (For an excellent discussion of the dangers inherent in comparing
the data derived from the existing longitudinal and cross-sectional studies
in morpheme acquisition, see Rosansky (1976)). Dale neglects to mention
that Brown was eventually forced into the embarrassing admission that
cumulative complexity simply cannot be applied to account for the relative
ordering of some of the morphemes, since the derivation of the morphemes
in a transformational grammar is not equated in any plausible way with
what the child learns or what he would have to learn to be able to justify
it. A case in point is the possessive morpheme. Brown explains why the
linguistic solution is incompatible with the data:
'Jacobs and Rosenbaum suggest that the genitive transformation could easily be written to generate the likes of Adam’s chair, the relative clause structure.

'The objections to this derivation and others like it for child speech are as follows. The first genitives, those in early Stage I, occur independently as if they were complete sentences in themselves. Neither at that time nor when they first appear as constituents in sentences does one find that corresponding simple sentences with have occur all that frequently. And the relative clause sentences which are of this derivation most closely similar to the genitive do not occur at all until much later: Stage V or beyond. So the parallels that motivate the derivation for adult speech are simply not present in child speech.

'Unfortunately, this leaves us with the Jacobs-Rosenbaum representation of the possessive. I have written a very inelegant derivation within the general framework of a Chomsky-style grammar but it will not fit the phrase structure of Jacobs and Rosenbaum. So I just have to omit the possessive from Table 45, as well as from the discussion...of the relation between grammatical complexity and order of acquisition.' (Brown 1973:313)

In fairness to Dale, it should be noted that he does list other factors which play a part in the order of acquisition of the morphemes (perceptual saliency, redundancy, semantic complexity). But his omission of this very fundamental weakness in the explanation which Brown prefers over all others is serious, because Brown’s book sets the standard of reasoning and justification found in the majority of the studies on child language acquisition. If research in this field is to produce scientifically acceptable descriptions of the causal mechanisms underlying the acquisition of a first language, then one of the very first tasks of investigators must be to seek evidence in the available data (child speech) which will either support or disconfirm the basic premises of the linguistic theory that makes very specific claims about how language learning takes place. Surely one of the most well publicized claims, one which has guided research in child language acquisition for over a decade, is Chomsky’s comment in Aspects (1965:59) that a child 'cannot help constructing a particular sort of...transformational grammar to account for the data presented to him.'
The implication of this statement for researchers in child language acquisition has always been clear: there exists a one-to-one correspondence between the formal devices of a linguistic grammar and the mental operations that a child displays in acquiring language. Witness Brown's own unequivocal declaration on this:

'Generative grammars have, as their ultimate point, a distinctly psychological goal. They are intended to represent formally the knowledge that the native speaker must somehow utilize in producing and understanding sentences. Insofar as a grammar has correctly captured this knowledge, it does not seem unreasonable that the relative complexity of derivations will be a determinant of the order of their acquisition.' (Brown 1974:406)

The sentiments expressed in the citation above can hardly be said to be anomalies. Sheldon (1977) supplies a host of similar quotations made by linguists as well as child language researchers. But surely Brown's earlier demonstrated failure to find a plausible basis for equating transformational solutions with mental operations renders the above proposition extremely dubious. At best it would seem that transformational grammars can be seen only, as Sheldon has put it, to reflect the knowledge which a child has in some 'general metaphorical sense in which no claims can be made that the form of the rules is what is learned, but only the substance of the rules...' (Sheldon 1977:9). It follows, therefore, that at least some of the formal devices utilized by transformational grammarians have no psychological content, and hence an explanation which depends on this, such as the principle of cumulative complexity, cannot be taken seriously by the scientific community.

Dale's concern with portraying the interface between a linguistic grammar and the investigation of processes underlying the acquisition of language is maintained throughout the book. Most of Chapter 4 consists of a well-written, comprehensive introduction to transformational grammars of
the Aspects and Fillmorian type. The intuitive appeal of case grammar for child language researchers due to cross-linguistic evidence which supports the existence of universal semantic categories resembling case relationships at the two-word stage (described in Chapter 3) is highlighted.

Chapter 5 begins with a chronological account of the formation of question structures in children, examined against the background of the transformations postulated for a grammar of English. Here Dale at least notes that in learning WH questions, children never go through a stage where they produce utterances which have the configuration of deep structures with the WH element at the end of the sentence, prior to its being preposed by the WH-fronting transformation. But Dale fails to bring out the significance of this observation for child language research. A reasonable requirement for linguistic concepts which are to qualify as explanations of how learning takes place is that they be reflected in or deduceable from the data. When no such indications are available and the data yield equally valid alternative explanations such as Ravem's (1974) simple strategy of amalgamating WH words (as well as, possibly, larger syntactic units) to sentence nuclei, then one must seriously question whether the transformations contained in a linguist's grammar provide any useful basis for the study of syntactic development in children. Indeed such reexaminations of the data strongly suggest that by adhering too closely to the formal operations of a generative grammar when analysing child speech, one runs the risk of overlooking generalizations which constitute a more accurate picture of how children acquire grammar. What is important for child language researchers is the recognition that equally valid alternatives to descriptions motivated by the theory of transformational grammar exist. This implies that the economy achieved in a
linguist's grammar may simply have no analogue at all in the cognitive processes deployed in first language acquisition.

A useful summary of the various approaches that have been used for investigating comprehension and production in children is another feature of Chapter 6. Although Dale takes pains to describe the strengths and weaknesses of each method, he neglects to mention one of the more obvious problems associated with the elicitation method used in studies like Carol Chomsky's (1969) highly publicized investigation of how young children learn the principle of minimal distance. The experimental task involved directing one child to either ask or tell another child something. If a child provided a tell response to an ask request, this was scored as an incorrect response, indicating that the child was unable to interpret the two verbs correctly. After running the experiment, Chomsky concluded that most of the five-year-olds were unable to perform the task correctly. She based her assumptions on data like the following:

Christine M. Age 5 years 1 month

Question: Ask Eric his last name.
(Experimenter)

Answer: Mandle
(Christine)

Question: Ask Eric what time it is.
Answer: I don't know how to tell time.

Question: Ask Eric who his teacher is.
Answer: Miss Turner.

Anyone who has worked with young children knows that the experimental setting constitutes a variable which can often influence the results in a direction totally unanticipated by the experimenter. This certainly appears to have been the case with Chomsky's experiment. It is extremely unlikely that Christine does not understand the difference between ask and tell;
rather, she seems to have adopted a basically helpful attitude toward the experimenter, supplying the correct answer to each of the questions, and responding truthfully to any questions which she cannot answer. This inherent complication in all experiments involving very young children should have been brought out in Dale's discussion of experimental procedures.

Chapter 6 contains a lucid discussion of the various theories which might be proposed to explain the causes of syntactic development in children: imitation, reinforcement, echoing, and expansion. Chapter 7 treats the development of semantic systems in children, focusing largely on the evolution of word meaning. Fodor and Katz's theory of semantic structure and Clark's semantic feature hypothesis are presented with great clarity, and their weak points and appealing aspects are brought out. This chapter also contains a summary of the results of specific research into children's conceptualization of the semantics of comparative and dimensional terms as well as various types of verbs.

The relationship of reading to phonology is treated in Chapter 8. A short introduction to phonetics and phonemics, plus a description of English vowels and consonants, is followed by a commentary on the child's prelinguistic perception and production abilities and a more extensive treatment of phonological development in children; the latter topic uses the Jacobsonian acquisition order as a point of departure. Next, a short introduction to the generative transformational concept of underlying forms prefaces a far too brief discussion of the relationship of underlying representations to English orthography. The argument advanced in Chomsky and Halle (1968) and Chomsky (1970) regarding the 'regularity' of English orthography is not brought out in this section. As a result, one cannot adequately appreciate or critically evaluate Carol Chomsky's (1970) proposals for
teaching reading, which are based on the Chomsky-Halle arguments found in the Sound Patterns of English. The ensuing discussion of various 20th-century contributions by linguists and educators toward developing methods whereby children can bridge the gap from symbol to sound to meaning slights the contributions of Bloomfield and the brilliant insights of Venezky, but provides a very adequate account of Pitman's i.t.a. and the rationale behind it.

At the close of this chapter Dale demonstrates once again the previously noted tendency to let pass any criticisms which might be raised against current linguistic theory. He omits all reference to Steinberg's (1973) experimental test of the psychological validity of Chomsky and Halle's vowel shift rule. The results of this experiment (the vowel shift rule has no psychological reality for speakers of English) render Carol Chomsky's methods for teaching reading invalid, since it is obviously pointless to introduce procedures designed to capitalize on non-existent 'knowledge'. Even though Steinberg's experiment is not mentioned in the text, it is at least listed in the references at the end of the chapter. Because Steinberg's test items contained monosyllabic stimuli of the type which are not intended to undergo the vowel shift rule, his results are open to serious criticism, but subsequent ingenious experiments by Ohala (1974) have confirmed his suspicions regarding the productivity of the vowel shift rule and the velar softening rule.

Chapter 9 outlines the Worf hypothesis, and describes the one cross-cultural experiment with children based upon it (Carrol and Casagrande 1958). A discussion of Vigotsky's view of the relationship between language and cognition sets the stage for the presentation of that eternal debate which holds such fascination for educational psychologists—Piaget vs. Bruner on the degree to which language plays a role in the development of
cognition in the child. There are numerous minor discussion topics sprinkled throughout this chapter: language and memory, language and egocentrism, communication and pragmatics.

Dialect differences and language development form the subject of Chapter 10. A brief introduction to sociolinguistics leads into a discussion of the many excellent contributions of Labov, most notably his destruction of the verbal deficit hypothesis, and his demonstration of the erroneous conclusions which can be drawn by teachers (particularly when teaching reading) who have no knowledge of the phonological rules of Black English. Chapter 11 opens with a discussion of the two approaches to language assessment, the analysis of spontaneous speech, and the use of the structured situation. The more common tests, e.g. the Peabody Picture Vocabulary Test, the Illinois Test of Psycholinguistic Abilities, the Northwest Syntax Screening Test, are described with occasional critical comments on their limitations and shortcomings. The remainder of this chapter is devoted to a description of the research on language development in mono- and dizygotic twins and the effects of social class differences in language development. A short appendix containing experimental procedures and examples of typical child language experiments and an extensive bibliography round out the book.

A novel feature is the inclusion of a short excerpt from a major work discussed in each chapter. These have apparently been added partly to expand on a topic that may not have received sufficiently detailed treatment and partly to stimulate additional reading. These excerpts appear at the end of the chapter just before the list of suggested additional readings. Each chapter abounds with minor topics which could be expanded in a later edition if research justifies this. These are always appropriately linked to the dominant themes.
If the book occasionally shys away from critically addressing the challenge of relating linguistic theory to language acquisition, it is nevertheless the most complete introductory survey of the issues, research, and methodology in the field of language development today. I can think of no major omissions save perhaps Slobin's (1973) important paper on universals in child language, but many of the observations contained therein appear at various points throughout the book. Dale's clear, unencumbered style should be an example to all scholars who are planning to write introductory textbooks. There is a lot more to psycholinguistics than language acquisition, but I would certainly recommend this book as an assigned text for an introductory course in psycholinguistics given in a linguistics or psychology department; it is an obvious first choice as the basic textbook for a language acquisition course offered in educational psychology. If Dale continues to make periodic revisions (hopefully the next up-dating might include a section on second language acquisition) of the quality and extent that went into this edition, the book could easily become the classic introduction to the field.

REFERENCES


Reviewed by Yamuna Kachru, University of Illinois.

The intent of this volume is to provide a perspective that will enable one to see bilingual education in terms of its full range of variability as well as regularities that are not self-evident. Bilingual education is essentially an interdisciplinary activity. Psychology, linguistics, and other pedagogically proximate sciences are very relevant in the context of bilingual education. They, however, are not enough to understand all
the variables and forces that have to be controlled before other variables and forces can have their maximal effect. The sociology of bilingual education is one of the most basic, powerful, and relevant disciplines in this context. It brings a perspective that helps one understand certain variables and forces which, if ignored, would be extremely detrimental to bilingual education. Fishman's volume attempts to underscore both the importance of the entire bilingual education enterprise, as well as the contribution of the sociology-of-language to it.

The volume is based upon research done under a grant from the Department of Health, Education, and Welfare in the United States Office of Education. It is organized into the following parts. Part I is essentially a passionate plea for bilingual education and is divided into four chapters which state that bilingual education is good for the majority (I, pp. 3-10), for the minority (II, pp. 11-22), for education (III, pp. 23-31), and for language teachers and teaching (IV, pp. 32-43). Chapter IV is authored jointly with Robert L. Cooper.

Part II summarizes the international findings. The introductory chapter of this part (V, pp. 47-51), asks the question 'Will foreign languages still be taught in the year 2000?' and comes up with a resounding 'Yes!' as the answer. The next chapter (VI), pp. 52-76), provides a worldwide perspective on bilingual education by briefly reviewing programs of one hundred and ten countries. The descriptions of bilingual education in these countries are too brief to be of much use. In addition, the statement on bilingual education in India, for example, seems to be based on doubtful studies. The three-language formula of Indian education is essentially to encourage multilingualism. In fact, completely bilingual schools are hard to find in India. Also, in most urban areas and boundary regions (i.e. boundary regions between states) there are schools with
bilingual/multilingual programs sponsored by various ethnic groups and social and cultural organizations. Chapter VII (pp. 77-93) presents charts displaying some of the social and economic characteristics of the nations of the world. Chapter VIII (pp. 94-107) reports the results of an empirical study on one hundred secondary bilingual education units. The study was conducted with a view to finding the particular descriptive details and dimensions that are 'most useful (or powerful) in explaining (or predicting) three criteria that are of prime interest to all those concerned with bilingual education'. These are the criteria of absolute academic success of bilingual schools, relative academic success of bilingual schools) (i.e. relative to that of monolingual secondary schools), and student satisfaction with bilingual schools. The conclusions derived from the study are of interest to educationists, administrators, linguists, teachers, and communities interested in, or seeking information about, bilingual education. Chapter IX (pp. 108-24) attempts to derive a beginning typology of bilingual education programs based upon four dichotomies: language given primary emphasis vs. language given secondary emphasis, mother tongue vs. other tongue, major vs. minor language, and out-of-school formal institutions. A table displaying sixteen societal contexts for bilingual education and programs operating in those contexts in various countries of the world is given on pp. 114-17.

Part III consists of four appendices. The first (pp. 127-35) presents a thumbnail sketch of ten bilingual schools outside the U.S. The second (pp. 136-49) consists of one-paragraph reviews of current research on bilingual education. The third appendix (pp. 150-200) is a useful contribution by E. Alyn Lewis on 'Bilingualism and Bilingual Education: The Ancient World to the Renaissance'. The last appendix (pp. 201-08) is a consolidated bibliography.

Reviewed by Chin-Woo Kim, University of Illinois

It has been nearly ten years since Lehiste's edition of Readings in Acoustic Phonetics (MIT Press, 1967) appeared, and it is not unreasonable to expect to see another anthology in the same field. Fry (1976), however, is not a sequel to, nor does it supersede, Lehiste (1967). In fact, Fry duplicates Lehiste very much. Out of 31 selections, ten articles (Nos. 3, 4, 6, 8, 10, 12, 17, 18, 24, and 31) also appear in Lehiste. And only one paper (No. 23 (1970)) post-dates Lehiste (the number is three if one includes those that appeared since 1962, the year of the latest reprint in Lehiste, the other two being No. 30 (1964) and No. 29 (1965)). One thus wonders if another anthology was warranted at all. One also wonders if and why only one article represents the decade of scholarship from 1966 till 1975. In fact, one has the impression that Fry was either unaware of Lehiste's Readings or completely disregarded it in his selection of articles. Nowhere in the book is Lehiste mentioned, not even in Further Reading (p. 467).

Some may dispute the claim in the Preface and in the jacket flap that 'the collection include all the important classical papers in the field.' Not all selections can be 'rightly regarded as classics,' nor can it be said that the volume contains all classical papers. The subtitle 'A course in basic readings' is somewhat misleading. The readings are not arranged to constitute a graded course, nor are they so 'basic' in both senses of the word, i.e. 'essential' and 'elementary.' A few articles (e.g., Nos. 1 and 5) appear to have only passing historical interest, and the mathematical formulae and flow charts in Nos. 3-6 are anything but basic to most linguists and phoneticians.
Twelve selections are reprints, understandably, from the Journal of the Acoustic Society of America. The group that is most represented is Haskins Laboratory (nine papers), and the authors most honored are F. S. Cooper and A. M. Liberman, mostly in coauthorship of the above papers.

The Introduction almost reads like a paper on E. Zimmer's "Phonometrie". Fry states that measurement is a basic procedure in experimental/instrumental phonetics and that the purpose of acoustic phonetics is to discover the correspondences between language units and features in the sound waves (p. 14). Toward the end, Fry projects that 'the future direction of work in acoustic phonetics is likely to be connected with work on brain functioning.' (p. 17). It is not clear in what sense this neurophysiological inquiry of speech still constitutes a branch of acoustic phonetics.

After the Introduction, the book is divided into five parts:

I. Acoustics of the speech mechanism (3 papers)
II. Acoustic analysis of speech (7 papers)
III. Acoustic cues in speech (13 papers)
IV. Investigation of prosodic features (7 papers)
V. Speech synthesis by rule (1 paper)

Part III is further subdivided into speech synthesis, perceptual experiments, and perception and linguistic categories. This subdivision is puzzling and not well defined, for most papers in Part III (and a few more in Part IV) describe perceptual experiments on linguistic categories using synthesized speech.

Each part and its subdivision is preceded by a short introductory essay by Fry, a helpful feature that is lacking in Lehiste. The coverage is good and extensive, except that in the acoustics of consonants, there is no paper on sonorants (nasals, liquids, and glides). There are also indications that Fry's volume underwent considerably more editing than
Lehiste's. For example, while Lehiste offers photostat reproductions of original articles, new plates have been made in Fry. Also, several articles are excerpts, and photographic plates are given together in one place. Still more editing could have been done. For example, in paper 4, all that is necessary in a book of basic readings to show the working of a spectrograph would be Figure 4, and the electric flowcharts (Figures 5, 6) could have been edited out. Cross references would have been helpful also. For example, the editor could kindly say that Liberman et. al (1957) cf. p. 256 is the same as paper No. 22, and Harris (1958) cf. p. 257 is the same as paper No. 19 in the same volume. Speaking of references, the editor could have compiled all the references at the end of the book. This would have provided the reader with a fairly good bibliography on acoustic phonetics (in addition to eliminating duplications and thereby possibly saving a few pages).

The guideline that Lehiste adopted in editing her anthology was the chronology of development of the field, selecting and ordering papers in such a way as to reflect the growth of the discipline. On the other hand, Fry's guideline seems to have been simply to choose what are considered the best ('classic') papers in the field, disregarding the developmental history. In this sense, and since at least the two-thirds of the selections do not overlap Lehiste, it can be said that the present volume is a complementary companion to Lehiste. As such, it is recommended to students of phonetics. As for its usefulness to language teachers and learners, its value would be marginal.
This bulky volume is the most ambitious attempt to date to write a comprehensive textbook of psycholinguistics. It is intended to be self-contained, not assuming any previous knowledge of either linguistics or psychology. As an introduction to the field, it invites comparison to Slobin 1974, Fodor, Bever and Garrett 1974, Kess 1976 and Cairns and Cairns 1976.

The most striking aspect of the book is the broad range of topics covered. T is unlike most other textbook writers in the field (with the exception of Slobin 1974 and Kess 1976) in not confining herself to the two favorite topics of sentence processing and language acquisition. In its broad (probably too broad) conception of the proper domain of psycholinguistics T's book is reminiscent of the program set down in the pioneering work, Osgood and Sebeok 1954. Beside the traditional topics of language acquisition, comprehension, and production, such diverse topics as the statistical structure of language, phonetic symbolism, the Whorfian Hypothesis, speech disorders, aphasia all receive their due (and undue) share.

Impressive as the range of topics and the long (29 pages) list of references are, the book is on the whole, very disappointing. T does little more than summarize the relevant experiments in short paragraphs of five or six sentences. The book reads like a collection of a graduate student's notes of his readings arranged according to topics and printed on running pages. T rarely synthesizes these findings, hardly ever attempts to interpret the findings of older studies in the light of more recent ones,
nor does she even identify the basic issues in the field. The impression one gets of psycholinguistics from this book is that of a collection of scores of disparate, miniscule studies, with little or no interaction among them, nor any agreement on the issues and methods of the discipline.

One can take the position that this is not so much the fault of the author as a reflection of the lack of agreement on the part of the practitioners of the field. However, T makes no attempt to relate the differences in the modes of research to the ideological differences from which they follow. There is hardly any discussion of the paradigm clash in psycholinguistics resulting from the Chomskyan revolution in linguistics.

T's failure to appreciate the radical nature of the problems posed by the Chomskyan revolution in linguistics for the field of psycholinguistics may be due to her rather uneasy attitude toward the alleged 'complexity' of transformational grammar. This attitude is seen in such statements as 'whether I wanted to or not, I had to describe TGG, because it has inspired many psycholinguistic experiments' (391); 'now that the difficult task of describing the main features of TGG has been completed...' (105). T describes the standard version of TGG, with a generative syntactic component and two interpretive components, semantics and phonology. In the light of T's (justified) dissatisfaction with purely structurally-based models of language and language use, one would have expected her to make use of the extensive work in generative semantics and pragmatics (as, for example Clark and Clark 1977 have done in their chapter on comprehension). Unfortunately, this work is hardly mentioned in T's book. Even considered on its own terms, T's discussion of TGG is far less cogent than that of, say, Greene 1972, Kess 1976, or Cairns and Cairns 1976.

At times, T's presentation is downright inaccurate: the two main
classes of features in phonology are said to be suprasegmental and distinctive (Ch. 2); there is a consistent confusion between phonemic and phonetic features, resulting in statements such as, 'individual phonemes are often influenced by surrounding phonemes' (49), emphasis mine --oNS). Taking issue with Fries's characterization of I, he, it, and you as content words, T suggests that they should be regarded as function words, because they are 'very short', 'many of them start with vowels', and presumably, 'they carry very little information' (55). The chapter on 'Grammar and Speech' (Ch. 4) opens with the statement, 'a grammar is often coded as a set of rules' (89), but T does not pause to explicate the important psycholinguistic implications of describing linguistic phenomena as a set of rules rather than, say, in the form of a disjunctive list.

It is not only the linguistic part that is disconcerting about the book; it appears that the author fails to identify even the basic psychological issues as well. Consider, for example, T's discussion of speech perception (Ch. 2), especially the discussion of categorical perception of phonemes: as usual, all the relevant experiments are summarized, but the basic issues involved, namely the general problem of perceptual constancy or stimulus equivalence is never mentioned. The theoretical implications of this phenomenon, one of which, surely, is the organism's capacity to 'abstract' relevant criterial features, completely eludes the author. Instead, we are offered a banal (pseudo-) explanation in terms of 'frequency of exposure' (39).

T seems to be fond of such banal conclusions. Having devoted a whole chapter to 'Universal (?) Phonetic Symbolism' (Ch. 9), she concludes, 'UPS, if it exists at all, is limited to speech sounds that have specific tonal qualities on which speakers of different languages can agree, and to a
handful of words that might contain these sounds to express the appropriate meanings' (331); on language and thought: 'the effects of language on thought probably depend on the circumstances' (201); on vocabulary learning in bilingual situations: 'vocabulary learning requires a good memory, hard work, and rational devices' (252).

In conclusion, T's book is more ambitiously planned and contains more individual pieces of information than any other psycholinguistics textbook in print; it is unfortunate that it should be fraught with so many inaccuracies, and such sloppy presentation as to make it less than suitable as a first introduction to the field.

REFERENCES


ANNOUNCEMENT

CATALAN CONFERENCE

The University of Illinois takes pleasure in announcing a Catalan Conference, to be held in Urbana, Illinois from March 31 through April 1, 1978. The immediate objective of the conference is the formation of the "First Conference of Catalan Studies in North America." The long-range goal is the eventual founding of an American-Catalan Society which will bring together all those interested in the various aspects of Catalan culture. Scholars of international reputation in the field will be attending, among them Professor Antoni Badía Margarit, Rector of the University of Barcelona and past president of the Société de Linguistique romane.

Even though the language of the conference should be Catalan, whenever possible, principal papers in either English or Spanish will also be accepted in order to ensure the broadest possible range of topics. The actual presentation should be twenty minutes long with a ten minute discussion period afterwards. The areas of presentations are: language, literature, and miscellaneous (open to any cultural or pedagogical aspect).

It is hoped that this conference will assist in the formation of the aforementioned American-Catalan Society and enable the participants in both to enhance and to publicize the increasing interest in Catalan studies both in North America and abroad. The organization of the conference is under the auspices of Albert Porqueras-Mayo (University of Illinois, Urbana) and Josep Roca-Pons (University of Indiana, Bloomington). It will be held in Urbana, Illinois.
STUDIES IN LANGUAGE LEARNING

Volume 2, Number 2, Spring 1978
will be a special issue on

LANGUAGE AND CULTURE

Edited by
JAMES W. MARCHAND

This issue will include both invited papers and papers written by UIUC faculty. The theme will be the position of culture in language teaching, with papers ranging from the theory of culture to practical problems of the presentation of cultural materials in the classroom.

Orders may be sent to:
SLL, Subscriptions, Unit for Foreign Language Study and Research
G70 Foreign Languages Building
University of Illinois at Urbana-Champaign, Urbana, Illinois 61801