Described here is a pilot development of a method for analyzing the structural content of a set of teaching materials, underwritten by the Committee for Cooperation on English in Japan and conducted in cooperation with the Fulbright Program in Japan and the English Language Education Department of the Faculty of Education at Hiroshima University. A basic assumption underlying the study was that teaching materials have a direct influence on learning and that some root causes of inefficiency in the teaching-learning process could be identified by rigorous and detailed analysis of the teaching materials. The most basic guideline of the study was intelligibility by those involved in teaching English and training teachers in Japan. The set of teaching materials examined was the three-volume junior high school English language textbook "New Horizon." The first part of the study concentrated mainly on the overall plan for the selection, sequencing and textual presentation of a set of teaching points. Pattern analysis was made on the basis of the verb "be" and four sentence patterns. The utterances were examined in terms of their grammatical usage and distribution, and verb structures. This method of analysis was then applied to another set of materials and the results were compared. The second project analyzed the structural content of the practice exercises in the first set of materials. (AMM)
1. Introduction

In a recent issue of *The Linguistic Reporter*¹ W. R. O'Donnell described an applied linguist as a person who concerns himself with practical language problems and brings to bear on them those aspects of linguistics and allied fields which will contribute toward their solution. While this view may not be acceptable to all linguists, particularly those who apply themselves to highly theoretical considerations, it should be acknowledged that the practical application of linguistics is important in its own right. By the same token, it should be acknowledged by the practicing teacher at the other end of the spectrum that the application of linguistic concepts and tools to practical language problems requires much more than a passing acquaintance with linguistic theory.

In Japan this type of activity, allied with similar quests in teaching and the psychology of learning, falls under the heading of English Language Education. One very recent study is the pilot development of a method for analysing the structural content of a set of teaching materials. This was underwritten by the Committee for Cooperation on English in Japan and conducted in cooperation with the Fulbright Program in Japan and the English Language Education Department of the Faculty of Education at Hiroshima University.

2. Project 1

The pilot study\(^2\) was divided into two separate projects.\(^3\) The first project concentrated primarily on the organization of statistical data and the second one on refinement of the classification system. The most basic guideline of the study was intelligibility by those involved in teaching English and training teachers of English. The set of teaching materials examined was the three volume junior high school English language textbook New Horizon.

2.1 Course of Study

To be approved for use in the Japanese school system an English language textbook must conform to guidelines set and strictly maintained by the Ministry of Education. These guidelines, known as the Course of Study, divide sentence patterns into six categories: Subject-Verb (S-V), Subject-Verb-Complement (S-V-C), Subject-Verb-Object (S-V-O), Subject-Verb-Direct Object-Indirect Object (S-V-DO-IO), Subject-Verb-Object-Complement (S-V-O-C), and Others. The last category is composed of sentence patterns such as "There is...", "Let us...", and "Subject-Verb-Present Participle." The researchers found that approximately 3200 utterances occurred in the text, and that of these the S-V-O category accounted for 44%, the S-V-C category for 25%, and the S-V category for 21%. The remaining three categories accounted for only 11% of the utterances, and most of these fell in the last category.

Thirty-four sentence patterns are identified in the Course of Study and to these four others were added during the project. Ranking the thirty-eight sentence patterns according to their functional load in the teaching materials,


\(^3\) A special debt of gratitude is acknowledged to the researchers, particularly Dir. Mikio Matsumura, for their invaluable assistance in the two projects.
it was found that a single pattern, the S-V-N pattern of the S-V-C category, accounted for 30% of the utterances. The next two patterns, S-BE-N and S-BE-Adj, accounted for only 12% and 10%, respectively. The remaining 48% of the utterances were represented as follows: 13 sentence patterns fell in the 1% to 10% range, 20 patterns in the 0.1% to 1% range, and two patterns in the .05% to .1% range.

2.2 Analysis of BE patterns

Pattern analysis was made on the basis of the verb BE and four sentence patterns: S-BE-Noun, S-BE-Pronoun, S-BE-Adjective, and S-BE-Adverb. Inclusion of the S-BE-Adv sentence pattern, which belongs to the S-V structural category, with the three S-V-C patterns was felt to be more important than maintaining the boundary line set by the Course of Study between the two structural categories. In terms of rank order the S-BE-N and S-BE-Adj patterns were the second and third most frequent patterns in the teaching materials, the S-BE-Adv pattern ranked ninth and the S-BE-P pattern ranked twelfth. Examples of these patterns are "This is Japan." (S-BE-N), "It is big." (S-BE-Adj), "Our classroom is on the first floor." (S-BE-Adv), and "That's mine." (S-BE-P). The four patterns accounted for over one-quarter of the utterances (852 out of 3200).

2.3 Grammatical Usage

These utterances were first examined in terms of their grammatical usage; that is, as affirmative or negative utterances and as statements, questions, and so forth. From this standpoint it was found that two-thirds of the utterances (555 out of 852, or 65%) were affirmative statements, 20% (164 out

4An S-V-N sentence pattern also occurs in the S-V-C structural category.

5These were sentences such as "Many people think it interesting to study science." (.09%) and "He had the submarine repaired there." (.06%).
of 852) were affirmative questions, and the remaining 15% (83 utterances) were divided among negative statements and questions, affirmative and negative short answers, imperatives, and exclamations. The affirmative statements were composed mainly of S-BE-N and S-BE-Adj sentence patterns, 49% (270) and 40% (222), respectively. The S-BE-Adv and S-BE-P patterns accounted for 10% and 1%, respectively. Conversely, the affirmative questions were rather evenly divided among the four patterns.

Negative utterances accounted for only 9%, or 79, of the sentences and about two-thirds of these (50) were negative statements. The others consisted of 7 negative questions, 19 negative short answers, and 3 negative imperatives. All of the negative questions, all but one of the negative imperatives (6 out of 7), and most of the negative statements (28 out of 50) belonged to the S-BE-Adj sentence pattern. Only the negative short answers (12 out of 19) were chiefly S-BE-N utterances.

2.4 Distribution

Next the utterances were examined to determine the distribution of the grammatical usages of the four sentence patterns in each of the three volumes. Limited to statements and questions, this disclosed that over half of the S-BE-N affirmative statements (142 out of 270) occurred in Volume 1, that nearly half of the S-BE-Adj affirmative statements (103 out of 222) occurred in Volume 3, and that nearly half of the S-BE-Adv affirmative statements (26 out of 56) occurred in Volume 2. In contrast, most of the affirmative questions for all patterns occurred in Volume 1. The distribution of negative statements paralleled that of the affirmative statements. The occurrence of negative questions and of S-BE-P utterances other than affirmative questions was insignificant.
2.5 Subjects and Complements

The third step in the analysis was an examination of the types of linguistic material which occurred before and after the verb in each utterance. These were coded as Subjects and Complements, the latter term being used loosely and for convenience to include adverbs as well as the usual nouns, adjectives, and pronouns.

A preliminary list of 46 Subjects and 93 Complements were identified. In affirmative statements the most frequent Subjects were Personal Pronouns, which occurred in 145 utterances, Demonstrative Pronouns (43), Proper Nouns (20), and Possessive Pronouns plus Nouns (19). A majority of each of these, except the proper nouns, occurred in Volume 3. In affirmative questions the most frequent Subjects were Demonstrative Pronouns (20) and Personal Pronouns (11), both of which occurred mainly in Volume 1.

The most frequent Complements in affirmative statements were a Possessive Pronoun plus a Noun, which occurred in 45 utterances (39 in Volume 1 and 6 in Volume 2), Proper Nouns (37), an Article plus a Noun (31), an Article plus an Adjective plus a Noun (31), a Complement plus a Prepositional Phrase (26), and the Possessive Case of a Proper Noun plus a Noun (17, all in Volume 1).

The three most frequent Subject-Complement combinations for S-BE-N affirmative statements were "It is your desk." (23 occurrences), "I am a teacher." (20), and "This is my pen." (17). The latter was also the most frequent type of S-BE-N affirmative question: "Is this your notebook?" (8); the second most frequent type was "Is this Frank's notebook?" (6). Similarly the three most frequent Subject-Complement combinations for S-BE-Adj affirmative statements were "It is big." (33), "I am very hungry." (24), "I am four feet nine inches tall." (10) and "I've been busy today." (10). The first type was also the most frequent in S-BE-Adj affirmative questions; for example, "Are you ready?" (4).
A total of 84 Subject-Complement combinations occurred in S-HE-N affirmative statements and 77 combinations in S-HE-Adj affirmative statements. Of the former, 49 combinations occurred once each, 12 occurred twice each, 16 from three to ten times, 5 from eleven to nineteen times, and 2 twenty times or more. The same was true for S-HE-Adj affirmative statements: 43 combinations occurred once each, 14 twice each, 18 from three to ten times, 1 from twenty to twenty-nine times, and 1 over thirty times.

2.6 Comparison

The last step in Project 1 was the application of this method of analysis to another set of teaching materials and a comparison of the resultant data. The teaching materials selected were the junior high school textbook prepared under the auspices of the English Language Education Council (ELEC) in consultation with linguists such as Fries, Twaddell, and several others. Only the first volume of each set of materials and the four HE patterns were examined; however, this limited examination provided three observations.

The first was that the ELEC text contained a broader range of grammatical usages for the four sentence patterns than the first text; eight, to be exact. The occurrence of these usages was small, only one to three examples in each case; however, the fact that they were included in the textual presentations was considered significant. Similarly it was noted that neither text contained examples of S-HE-Adv exclamations or S-HE-P affirmative short answers, exclamations, or negative questions.

The second was that each text emphasized different sentence patterns and different grammatical usages. The first text concentrated on S-HE-Adv utterances while the ELEC text concentrated on S-HE-Adj utterances, and the first text concentrated on S-HE-N statements and S-HE-P questions while the ELEC text concentrated on the opposite, S-HE-N questions and S-HE-P statements. In
addition, the first text emphasized Pronoun complements in affirmative questions while the JLJC text emphasized Noun and Adjective complements.

Thirdly, the treatment of Subject-Complement combinations was quite different in the two texts, not only in terms of selection but also in terms of frequency of occurrence and distribution.

3. Project 2

Turning to the second project, the main objective was to examine the structural content of the practice exercises in the first set of teaching materials. The difference between Projects 1 and 2 was based primarily on a methodological consideration; that is, on the distinction between Plan and Procedure aspects of the teaching-learning process. Project 1 dealt with the overall Plan for the selection, sequencing and textual presentation of a set of teaching-points, while Project 2 was an attempt to deal with the Procedure implied in the teaching materials for guiding the students to a mastery of each teaching-point.

Obviously a set of teaching materials cannot provide solutions for the vast number of variables which may exist in classrooms; however, it must form the basis of at least some, if not most, of the effort made by both the teacher and the students. Moreover, if one can assume that the teaching materials are based on the writer's considerations of the needs of both the student and the teacher and that they are aimed at obtaining optimum results, then the practice exercises can be said to reflect those areas in which the writer has made a special effort to enhance or insure learning.

3.1 Modifications in research method

In the first project Subjects and Complements were coded as units and numbered as they appeared in the teaching materials. As a result it was inevitable that the resultant classification system would consist of a mixture of
specific and general distinctions and contain a certain amount of overlapping. To overcome these shortcomings the first modification made in the second project was to replace the terms Subject and Complement with the terms Pre-verb and Post-verb. The second was to replace the unit concept with a base plus expansion concept, and this in turn was adapted to a computer card matrix. Most of the time and effort of the researchers was spent on the classification of pre-verb and post-verb material and the most persistent problem was to resolve classification questions without introducing the limitations of grammatical theory into the classification system. The three basic guidelines used in the present projects, with only minor amendments, were first, rejection of the main verb; second, maintaining the word order of the utterance; and third, accounting for all of the pre-verb and post-verb material in each utterance.

3.2 Classification system

The resultant classification system for pre-verb and post-verb material consisted of seventeen columns: 1 column to distinguish between the pre-verb, post-verb, pre-noun phrase, and post-noun phrase, 8 columns to code Noun Phrases, and 8 columns to code types of Modification. Each column contained nine rows; however, few were completely filled.

The Noun Phrase columns consisted, in order, of a borderline column for such items as question words, pre-determiners, infinitives, and gerunds, 1 column for determiners, 4 columns for modifiers, 1 column for noun heads, and 1 column for final borderline items. The Modification columns followed roughly the same pattern: the first and last columns for borderline items (e.g., interjections, the word "Please", etc.), and the remaining six columns for adverbial, adjectival, conjunctive, and other items.
In addition to these, 8 columns were set aside for other types of information: 1 for sentence type, 2 for grammatical usage, 1 for structural category, and 4 to code the practice exercises. The first, sentence type, (i.e., simple, compound, etc.) was a refinement based on the first project. The second and third, grammatical usage, were for the type of data obtained in Project 1. The fourth, structural category, was for the six categories specified in the Course of Study.6

With regard to the practice exercises,7 the first of the four columns distinguished between exercise utterances which, if used orally, would develop the student's recognition and those which would develop his production. The second column consisted of the Type of Stimulus used in the exercise: a picture, a picture plus the target language, the native language, etc. The third column indicated the Type of Activity the student was called upon to perform: substitution, completion, rearrangement, etc. The fourth column designated the presence of such Controlling Factors in the exercises as definite words, sentences, or patterns or a choice of words, sentences, or patterns.

3.3 Comparison

Comparing grammatical usage, structural category and sentence pattern data obtained in both projects for Volume 1 disclosed that the Plan and Procedure aspects of the teaching materials were roughly parallel. The occurrence of most of the grammatical usages and the main structural categories were larger for the practice exercises than for the textual presentations; however, the opposite was found for the four BE patterns. These were consistently smaller for the practice exercises than for the textual presentations, especially for

6 An attempt was made to code the sentence patterns according to the Course of Study but became so complex and time consuming that it had to be dropped.

7 N. Kakita developed the organizational framework for this data.
the S-EE-N pattern (111 versus 222).

4. Concluding remarks

These in very brief outline are the initial steps taken at one institution to gain insights into a practical language problem, that of ineffective instruction. A basic assumption underlying the study was that teaching materials have a direct influence on learning and that some root causes of inefficiency in the teaching-learning process could be identified by rigorous and detailed analysis of the teaching materials.