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Explicit explanation
of English verbs using a parser program:
Toward designing an effective language learning
curriculum in EFL[1]

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Currently, the command of the English language seems to be a prerequisite before entering a business world because of the heavy communication traffic in English via the Internet. The Ministry of Education in Japan has decided not only to introduce English to elementary schools but also to ask some national technological colleges to offer courses in English. However, in the field of teaching English, no one effective teaching method has been found yet. In this paper, a method utilizing computer-based programs, especially a chart parser program, will be discussed. This method has been designed to help learners understand the rules of English to facilitate the acquisition of the language.

1. Introduction

Since Krashen claimed that explicit knowledge, i.e., learned competence, of a second language (L2) does not become implicit knowledge, i.e., acquired competence, the communicative teaching approach has come into fashion and explicit explanation of linguistic information has been criticized and devalued. Krashen states:

> . . . conscious knowledge of simple TL grammar rules, learning, is rarely accessible in natural communication, when the language user is focused on meaning, not form. Further it could not later become acquisition. (Krashen & Scarcella 1978) Hence, the instruction that produced learning was also relatively unimportant. (Cited in "Instructed Inter-language Development" by Long, 1988)

In the communicative approach, learners are assumed to induce rules implicitly like children in acquiring their first language. However, this statement has seemed rather doubtful to me, someone who has been learning English in an "English as a foreign language" environment, Japan. I sometimes see myself selecting an appropriate complementizer to use with a verb when talking with my friends in English. When I am uncertain about a complementizer, I tend to avoid using the verb. After consulting a dictionary, I try to use the verb with an appropriate complementizer. To me, rules and explanation of rules are crucial in developing my foreign language, English.

To compare the effectiveness of the communicative approach and explicit explanation approach, only a little research has been done. However, one experiment using a miniature artificial language conducted by Kubo (1994) suggests that an incorporating an explicit explanation works effectively. Kubo compared the task-completion time among 4 methods of presenting sentences, namely, (1) with presentation of a list of lexical items and an explicit formal explanation of linguistic information, (2) with presentation of a list of lexical items but without an explicit explanation, (3) without presentation of a list of lexical items but with an explicit explanation, and (4) without presentation of list of lexical items and without an explicit explanation. Among these combinations, the first and the third groups, who were provided with an explicit explanation of linguistic information, completed the task faster than the others, regardless of the ways the lexical items were treated. The first and the third groups completed the task within 43.68 minutes and 30.43, while he second and the third groups within 43.52 and 63.65. This indicates that the learners benefited from the explicit linguistic explanation.

The duration of retention was also examined. Though the second group showed a long retention of simple sentences, the groups given the explanation showed longer retention of structurally complicated sentences. A second experiment was administered to three groups to investigate both task-completion time and duration of retention; (1) one group provided with an explicit explanation and examples, (2) another group with examples but without an explicit explanation, and (3) a third group with an explicit explanation but without examples. In both the task-completion time and the retention test, the third group with an explicit explanation but without examples did best, followed by the first group. Kubo's experiments suggest that an explicit linguistic explanation

works effectively in learning an artificial language.

The use of explicit explanation is recommended by Sharwood Smith (1980) in language teaching for adults in his paper titled "Consciousness-Raising." He stresses that the naturalistic learning method, which assumes that the learners will discover regularities on their own without any explanation, requires a tremendous time, whereas learners' conscious use of explicitly learned rules further motivates the learners to communicate in a target language with accuracy though with lack of fluency. Sharwood Smith continues that fluency is acquired later as a result of practice in class and out of class. He concludes that explicit conscious learning is a short cut to the acquisition of L2.

Partially agreeing with Sharwood Smith's "conscious raising," VanPatten advocates "input processing instruction."

> Processing instruction is consonant with Sharwood Smith's position but also goes beyond it in an important way. Note that Sharwood Smith is concerned with making forms salient, that is, bringing them to learners attention in some way. Processing instruction does this but also attempts to provide opportunities for consistent form-meaning mappings in activities. Simply bringing a form to someone's attention is no guarantee that it gets processed at all or gets processed correctly. For acquisition to happen, the intake must continually provide the developing system with examples of correct form-meaning connections that are the result of input processing. (VanPatten 1996: 84)

> That is, processing instruction does not seek to "pour knowledge" of any kind into learner's heads; it assists certain processes that can aid the growth of the developing system over time. (VanPatten 1996: 85)

> ...processing instruction is not just explanation about language and grammatical form. It includes information to the learner about what to attend to in the input. Most importantly, it includes structured input activities that encourage learners to make form-meaning mappings they might not make when exposed to nonstructured or "spontaneous" input.

> ...It is not enough that learners simply be directed to the form; they must also use it to comprehend the meaning of the sentence. Thus, the activities are formulated with the processing strategies of learners in mind. (VanPatten 1996: 86)

This is what I have been doing as a language learner. After learning meanings of a word, I usually consult a dictionary or a concordance program on WWW to learn how it is used. Just knowing the meanings of a word, for example, a verb, is not enough to acceptably output it in communication. The knowledge of its complementizers in case it is a complement-taking verb, and some sample sentences which use it are essential

for me to process it. At this stage I comprehend this verb and probability of its intake with its information becomes high. Later I might be able to output this verb accurately. Or I might output it erroneously, which means incorrect data has been taken into my developing system of the English language. Or I might not output it at all, which might indicate that nothing has been taken into my system or only fraction of the information has been taken. In case of a partial intake, my system might process this verb in a receptive mode, i.e., reading or listening.

2. The first language (L1) and the foreign/second language (L2)

Due to the current technological developments, the mechanism of the brain in process-ing images, sounds, languages and others is becoming clearer. From the studies on aphasia, it has been reported that L1 and L2 use different parts of the brain. Moreover, in another study, when the English area was paralyzed with electric shocks, a bilin-gual speaker of English and Spanish was not able to speak English but nothing was interfered in speaking Spanish (Uemura 1996). Strokes deprived Edwin O. Reishauer, a late ambassador to Japan, of his Japanese ability although the strokes did not dam-age his English. For him, Japanese was said to be his first language (Kamisaka 1994). Therefore, it can be claimed that L2 is processed in an area different from L1 if a L2 user has acquired enough of the L2 system to develop an independent system in the brain. For the growth of the developing system in the brain, L2 language instruction is responsible, as VanPatten claims.

The developing system of L2 is assumed to use linguistic information in process-ing L2. This is what L1 users also do in processing L1. Boland et al. (1990) presented evidence for the immediate use of verb control information in the sentence processing of L1 users. They used (1) a subject-controlled infinitive sentence such as "I tried to convince him" and (2) an object-controlled infinitive sentence such as "I forced you to convince him." If syntactic combinatory information contained in lexical items is not used in processing these sentences, the unacceptable judgement of a sentence cannot be made until the end of the sentence. However, in sentences such as "I persuaded the cow to surrender the weapon", the subjects in this experiment, native speakers of English, marked an unacceptable flag right after they heard the second verb "surren-der." This means that the subjects know that the object "the cow" will be the subject of the infinitive because "persuade" forms an object-controlled sentence. As a cow is inappropriate as the subject of "surrender", the subjects of the experiment marked this sentence wrong as soon as they heard the verb "surrender". Boland et al. conclude that the language processing system of L1 users "fully exploits" the syntactic combinatory information of lexical items during language comprehension.

Although the use of explicit explanation of syntactic information has been repeat-edly criticized because of bad experiences with the grammar-translation method, syn-

tactic information tremendously reduces the burden on me in using L2. In a productive mode, if I am sure that a verb is intransitive, I put a preposition between the verb and its object though choosing an acceptable preposition requires a lot of information. When I am confident in choosing a complementizer correctly, I do not need to spend so much energy forming a sentence since a skeleton of a sentence is clear to me. I can pay attention to other parts such as countability of nouns or a tense and aspect. In a receptive mode, I expect an object and an infinitive "to" as soon as I hear "forced" of "The U.S. government forced Japan to open a market." in transcribing a news program.

In short, the L2 system needs to be developed in a specific area in the brain. If the developing system stores syntactic information correctly, L2 users can process L2 economically. To enhance the system to this stage, providing an effective learning environment is vital.

3.   EFL in Japan

That learners can spend a day without hearing English at all is one of the differences between ESL and EFL in Japan. No living models of English are available outside of class, unless a student is especially lucky. TV and radio programs and the Internet are the main English-language resources. Limited opportunity for testing learners' hypothesis about English is another difference. Answering teachers' questions orally or in a written form seems to be the only chance. Usually no immediate feedback on a written response is available. Feedback on an oral response is spontaneous but the number of times per class a learner gets questions from a teacher is small. In English classes at high school, I recall myself creating quite a few sentences feeling uncertain as to their correctness. But I rarely asked my teacher to evaluate all those sentences.

Later in a CALL course at University of Illinois, a parser program for children was demonstrated, which was run on PLATO. Pressing words on a touch screen, a user wrote a sentence such as "The girl jumped over the car." When the sentence was correct, a crude animation on the screen showed the girl jumping over the car. That was the device I had dreamed of having. Later, I obtained a HyperCard chart parser program and started using it in a college-level class. This parser appears at Appendix 2.1. The parser program was provided to the learners with the aim of giving them trial-and-error experiences, which EFL in Japan generally lacks. As L1 children test their language surrounded with ample L1 input, L2 learners test their hypothesis using a parser program. This testing process might simulate one phase of the process of the first language acquisition.

4.   Course design

The following was the procedure for using the parser in my 1996 class.

1. Reading and listening.

   An article in the latest *Mainichi Daily News* was the reading material and the NHK satellite TV news "Japan today" was the listening material. As my students always want to learn a so-called "living" English, I offered them current and living language material. A study guide was distributed to help the students read the newspaper. A computer-based "reading pacer" was utilized to facilitate comprehension of the news. This computer program presents one chunk of words at a time, each chunk forming one sense group.

2. Explicit background relevant to the news.

   Background to the news was introduced to the students and syntactic information, especially the information on verbs, was intensively discussed using a dictionary and a parser program, which will be described in (4) in this section. Intransitive verbs, transitive verbs and complement-taking transitive verbs were repeatedly discussed.

3. Reading practice with the aid of the reading pacer program.

4. Trial-and error-experiences using a chart parser program to test sentence formation.

   The parser program analyzes a student's input sentence and returns the result. To a syntactically unacceptable input, the program returns an error message saying "Parse failed." To an acceptable input, it returns an o.k. message saying the sentence has been successfully parsed. It also returns a tree diagram of the sentence which shows how the student's input sentence has been analyzed. In 1996, my students were encouraged to run the program to check their sentences. When their responses were rejected, they tried to locate errors with their classmates. When they could not solve problems, they asked me for help. Even at the midterm examination when they were asked to translate Japanese expressions into English expressions, they ran this parser to check whether their sentences were syntactically acceptable or not. In this way, the learners were given a chance to grasp the sense of how to generate a syntactically acceptable sentence.

5.   Experiment

At the end of the academic year of 1996, at the final examination, the students were asked to complete paragraphs translating the Japanese expressions into English using given verbs. The two paragraphs appear here as item (A) and item (B) of Appendix 1. The topic of the first paragraph, "influenza in nursing homes," was new to the students, though some of the expressions appeared in the news dealt with in class. The second

paragraph was a summary of an article on International Court at the Hague, which was used in class. All the given verbs except "force" had been introduced to them, but in fact I had repeated the instruction that "force" and "ask" use the same complementizer. For the purpose of this study, spelling, tense and article errors were ignored. Both "want" and "like" were accepted in the first paragraph and "force" and "make" in the second paragraph.

During the second week of the academic year of 1997, new students who had not undergone this teaching method took the same test. The purpose was to see the effect of the explicit teaching method adopted in 1996.

6.   Discussion and conclusion

The percentages of correct use of each verb are given in Table 1. The '96 students used all the verbs except "believe" better than the '97 students. In the '96 group, "believe" in "believe in ⋯" had been discussed and compared with "believe that (+clause)." As a result, some students got confused with these two usages. Because of this confusion, they could not complete the first sentence of the second paragraph. Confusion was also observed in expressions with "tell" and "force," as the expressions "tell somebody to do" and "tell somebody that (+clause)" had been discussed. Sixty percent of the '96 students used all the verbs correctly although some of them used a wrong preposition with the intransitive verbs.

Table 1: The percentages of the correct uses of the verb complements

	die	tell	like	apolo-gize	believe	force	refuse	rule	avoid	use
'96 N=25	96%	76%	96%	100%	92%	64%	76%	76%	76%	100%
'97 N=33	66.7%	63.6%	87.8%	27.3%	100%	21.2%	60.6%	42.4%	33.3%	69.7%*

(*Three students in the '97 group did not use "use." As the expression was acceptable without it, their responses were counted as correct responses. If they were not counted as correct responses, the percentage was 60.6.)

One point was allotted to each correct usage of the verbs of the paragraph writing test, which consisted of 10 verbs. Means, medians, maximums, minimums and standard deviations of the scores of the two groups of students were computed and the results are presented in Table 2.

The difference in means was large. The mean of the '96 students was 8.58 (n = 25) while the mean of the '97 students was 5.8 (n = 33). The scores of the two groups were

Table 2: Means, median, max, min and standard deviations of the paragraph writing test

	Mean	Median	Max	Min	SD
'96 N=25	8.48	9.0	10	6.0	1.36
'97 N=33	5.73	6.0	8.0	3.0	1.53

compared by the Mann Whitney U test and the result (U = 82.5 corrected $p < .0001$) shows that the difference of the scores between the two groups was significant. The group which had received the explicit teaching method did the paragraph writing test better. The result for the students not exposed to explicit clarification of verb usage shows that their developing systems of L2 have problems with verbs, which are crucial in forming sentences.

The 1996 course design lacked a communicative activity after the trial-and-error experience. As this course involved a 90-minute class, which was offered only once a week, it was difficult to fit in such an activity. Integration with other courses such as oral class and writing class was highly desirable. Schulze (1998) cites Ellis about the importance of a combination of instructions:

> In general terms, there is evidence that adult learners who combine instruction with exposure to the foreign language achieve the greatest gain in proficiency (Ellis, 1994). An important factor determining the success of formal instruction is the learner's stage of development. Ellis (1994) states that 'instruction may lead to more accurate use of grammatical structures in communication providing a learner is able to process them.'

Though another method might help learners process L2 in an EFL setting as well, using a parser program is one way that develops the L2 systems of learners effectively. With the accurate use of the verbs, the chances are high that L2 users will enjoy communication in L2 and will be motivated further to learn more to become more fluent users of L2.
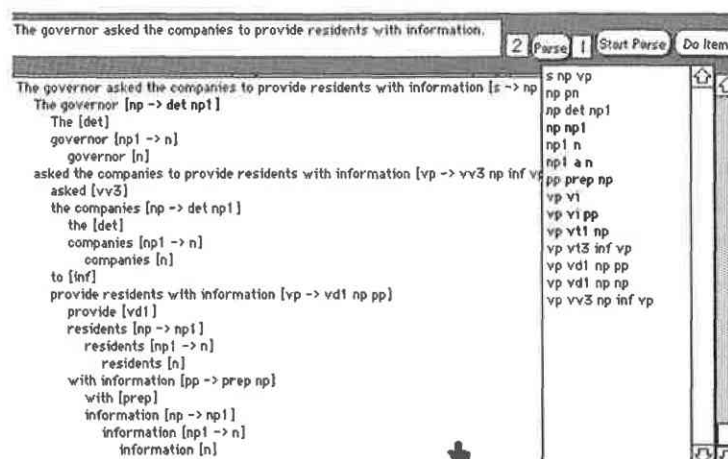
Appendix 1. Sample paragraphs[2]

(A) About ten senior citizens have already **died** of influenza in nursing homes. The director of a nursing home where four people had died **told** reporters that he would **like** to **apologize** to their relatives.
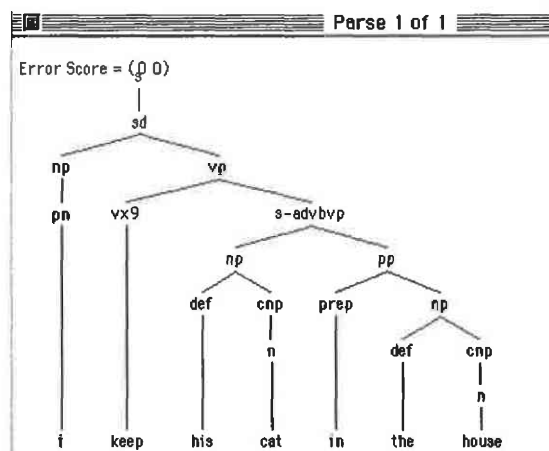
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[2]Bold letter verbs were examined in this study.

(B) **I believe** the pressure from big countries such as the United States and France **forced** the International Court to **refuse** the request to **rule** on the use of nuclear weapons. Because of the relations with the United States, the Japanese government **avoided using** the word "illegality."

Appendix 2.

2.1: HyperCard chart parser

2.2: The LISP chart parser used in the present study

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