Functional View of the Extraction Process
and Its Relevance to Explaining L2 Learner Judgements

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By now, considerable numbers of empirical studies have addressed the issue of accessibility to Universal Grammar in second language (L2) acquisition. Among them, the investigation into the role of Subjacency in adult L2 acquisition has not come to a definite conclusion. In general, learners are reported not to have the native-level of grammatical intuition, while at the same time they do not seem to make judgements in a completely random manner. We discuss the possibility that the functionally-defined notion of dominance may have potential to give an adequate explanation of the observed learner behavior. The consideration carries the implication that complete explanation of the highly complicated matter of L2 acquisition will not be achieved without referring to functional properties of language.

1. Introduction

It is well known that there are wh-questions in English that most native speakers judge as ungrammatical. This fact has been discussed predominantly within a framework of generative (or universal) grammar. Specifically, researchers in this tradition have considered the issue in terms of syntactic constraints or conditions involved in the extraction process of wh-words, and have constantly revised their theories so far. Since the beginning of the eighties, attempts have been made to treat extraction from different structures in a unitary fashion, with the fundamental conception that certain maximal projections block movement of elements.

Let us first consider how the early-eighties version of Subjacency, a proposed subcomponent of Universal Grammar (UG), explains the extraction phenomenon. Roughly speaking, the condition prescribes that any movement, including extraction, that crosses more than one bounding node at a time generates an ungrammatical sentence, where bounding nodes for English are generally claimed to be IP (=S) and NP. This formulation successfully explains the possibilities of extraction from the structures in (1):
In accordance with the assumption of successive cyclic application of movement rules, it is supposed that the COMP positions not occupied by other wh-words serve as “staging posts.” Thus, in (1a), what in the embedded clause first moves into the COMP position of the embedded CP and then to the head position, crossing only one IP node in each step. The generated sentence (2a) below is, therefore, grammatical. As regards (1b), however, while the first movement of who into the COMP of the embedded CP crosses only one IP node, the second movement unavoidably crosses two bounding nodes, NP and IP. Hence the ungrammaticality of the resultant sentence (2b):

(2) a. What did John believe that Bill bought?
   b. Who does John believe the claim that Mary loves?

This generative approach has two prominent characteristics worth noting here. First, the principle of Subjacency and the relevant theoretical devices (the bounding node, the maximal projection, etc.) are all considered to constitute an innate mental state of human kind. Chomsky repeatedly claims that this kind of innate endowment makes children’s language acquisition possible. Second, in this theoretical framework, no mention is made of semantic, pragmatic, or functional properties of language. This is because the proposed linguistic knowledge is considered to be autonomous in the sense that there is a language module of mind which is independent of other faculties responsible for nonlinguistic cognitive skills. The first point is known as nativism and the second as autonomy of linguistic competence, both of which are very strong claims of the Chomskyan linguistics.

Soon after the Subjacency formulation was advanced, applied linguists noticed its implication to the investigation of adult second language (L2) acquisition. Given that human children innately “know” the barrierhood of certain categories and, owing to this, correctly judge the grammaticality of sentences like in (2), it would be interesting to see what L2 learners (especially adult learners) of English know of the grammaticality of the same kinds of sentence. If learners can make correct judgements, Subjacency (and, by extension, UG) may be considered to be in operation in L2 acquisition, too. If they cannot, the logic will lead researchers to the claim that access to the principle is impossible for L2 learners for some reason.

Considerable numbers of experiments have been conducted to probe this issue. In the next section, the studies are overviewed that have explored whether L2 learners of English can identify Subjacency violation where their first language (L1) does not represent any movement rule.
2. Accessibility to Subjacency in L2 Acquisition

Bley-Vroman, Felix and Ioup (1988) required 92 Korean learners of English to make grammaticality judgements of sentences that involved Subjacency violation. The subjects' L1, Korean, is supposed not to have rules of movement and thus is assumed to give the learners of no crucial information on this principle. Generally, the researchers found that 82.4% of learner responses was correct, the percentage varying from 72% to 92% from sentence to sentence. It is true that this rate of correct response is lower than that provided by a native-speaker control group. Considering, however, that this is obviously higher than the chance rate, the researchers conclude that Subjacency is operating in L2 acquisition, at least partially.

Shachter's (1988) grammaticality judgement test included 24 $wh$-questions that involved Subjacency violation, and 24 declarative sentences with the equivalent structures (i.e., declarative sentences including complex noun phrases, sentential subjects, etc.). The latter set of sentences was included to see whether subjects had adequate proficiency in English to judge the former set. In other words, it was used as the syntax test for judging Subjacency violation (of course, "grammatical" was the correct answer to the sentences). The ungrammatical sentences were categorized into four types according to the structures involved, and each type was composed of six sentences. In Shachter's analysis, the criterion for passing each test was five correct answers to the six tokens. The numbers of Korean learners that, while passing the syntax test, failed in identifying the Subjacency violation were 7, 8, 15, and 13 out of 21 for the respective types. A control group of native English speakers provided correct responses almost perfectly. Shachter, therefore, maintains that L2 learners cannot reach the principle of UG that is not realized in their L1.

Yamaoka (1988) replicated the experiment of Bley-Vroman et al. (1988) with Japanese learners studying English only formally in a foreign language environment in Japan. The overall percentage of correct response (i.e., the rate of grammatical and ungrammatical sentences judged as such) was 65%, which was higher than the chance rate. It was pointed out, however, that the response might be biased in that learners tended to consider sentences with simple structures (e.g., What did John find the ball and?) to be grammatical and those with relatively complex structures (like sentence [2b] above) ungrammatical. Yamaoka suggests that if this tendency is taken into consideration, it may not be possible to argue for the operation of Subjacency for the subjects.

For learners in a second language environment, Johnson and Newport (1991) conducted an experiment in a similar line, with subjects who had been living in America for substantial periods. They report that adults and children above seven years of age often fail in detecting Subjacency violation.

Judging from these results put together, it should be acknowledged that despite the attempts made by many researchers, the research question, accessibility to Subjacency in L2 acquisition,
has not yet been satisfactorily answered. It seems that learners do not have the native-level of grammatical intuition while at the same time they do not make judgements in a completely random manner. Given this, identification of the reason or reasons for this indeterminacy seems necessary. This may be achieved in several ways. In this paper, we approach the task by reexamining the linguistic theory that is presupposed.

3. A Reexamination of Subjacency and Functionalism in the Extraction Process

(1) Problems with the Syntactic Approach

Although most of the L2 studies have layed their bases on the version of Subjacency that was illustrated in the introductory section, the theory itself has recently undergone a considerable revision. It is because linguists have come to recognize that the framework is not without problems. Consider the structures in (3), and also the sentences in (4) that are generated from them:

(3) a. [IP you saw [NP pictures of whom]
b. [IP [NP pictures of whom] were on sale]

(4) a. Whom did you see pictures of?
b. *Whom were pictures of on sale?

Despite the fact that most native speakers of English accept (4a) on the one hand and reject (4b) on the other, the theory wrongly predicts that both are unacceptable. Notice that in both cases wh-words inevitably cross NP and IP nodes at a time in the movement into the head positions.

In order to overcome this point, Chomsky (1986) proposed Barriers framework, featuring novel conceptions such as L-marking, the blocking category, and inheritance. The framework successfully explains the facts represented in (4). This theoretical revision has in turn caused a serious problem, however: The new theory is not capable of explaining another set of sentences that the traditional version successfully accounts for (e.g., sentence [2b] above; see Ando, Amano & Takami, 1993, pp. 206-214 for discussion of this point). Researchers are still struggling for a sound formulation of the constraints that can account for the grammaticality of all the relevant sentences.

It may be important for L2 researchers to recognize that the linguistic theory they presuppose is not flawless. The inconclusiveness of L2 research may essentially be due to the failure for the theory itself to capture the extraction phenomenon completely. Indeed, there are substantial numbers of linguists who are not satisfied with the generative approach. They believe that semantics, rather than syntax, plays a major role in deciding extraction possibility and have
proposed alternative functional analyses to overcome the limitation of the syntactic approach. One of such attempts will be illustrated below.

(2) Dominance

Erteschik-Shir proposed the idea of dominance in a series of her papers (e.g., Erteschik-Shir & Lappin, 1979; Erteschik-Shir, 1981) in order to provide an adequate explanation for the extraction phenomenon. Independent of this, Kuno (1976, 1987) advanced the idea of themehood (or topichood) for the same purpose. These two are discourse/functional notions that are similar to each other to the degree that they need not be discriminated for the aim of the present paper. Let us concentrate on the former and observe how the discourse-based notion of dominance works for its purpose.

Consider that a speaker produces an utterance in a conversation. In a normal situation, the purpose of this behavior may be to transmit one piece of relevant information in it to a hearer, the focus being on that information chunk. The discourse will be natural and meaningful only if the hearer, too, pays due attention to the point and hence that information becomes the topic or theme of the following conversation. Such a part of a sentence to which a speaker intends to direct the attention of a hearer, Erteschik-Shir considers to be dominant.

Without help of background information, there is usually no determining the dominant part of a sentence, since the notion of dominance is functionally defined in terms of speaker’s intention in a discourse. The isolated sentence I played tennis with Mary in the park, for example, conveys no information as to whether the speaker intends to talk about the person with whom he/she played tennis or the place of playing the game. Importantly, however, there are cases where this does not hold. That is, certain semantic contents entailed by certain syntactic structures are by no means interpreted as dominant. Sentence (6) is relevant in this regard:

(6) John carefully considered the possibility that Orcutt is a spy.

Erteschik-Shir and Lappin (1979) demonstrate that the embedded clause of sentence (6) cannot be dominant, operationally, by means of what they call the lie test. For the test, the entire sentence is put in a context of direct discourse and then the contents of the matrix and the embedded clauses are denied in the way shown in (7):

(7) Bill said: John carefully considered the possibility that Orcutt is a spy.
   a. which is a lie— he didn’t (consider it carefully).
   b. 'which is a lie— he isn’t (a spy).

As we see, the denial of the embedded sentence makes the discourse unnatural. This means that it is not possible to treat that part of sentence (6) as a topic of further discourse, which is, by
definition, equivalent to saying that the part cannot be interpreted as dominant in the sentence.

Based on the notion of dominance, the researchers propose Dominance Hypothesis, claiming that extraction from a non-dominant part of a sentence results in an ungrammatical sentence. For example, sentence (8), which is generated by extracting an element from the non-dominant clause in sentence (6), is actually ungrammatical:

(8) ‘What did John carefully consider the possibility that Orcutt is?

But why is it that extraction from a non-dominant clause is impossible at all? To rephrase what Erteschik-Shir and Lappin state, the answer seems to be as follows. In uttering a wh-question, a speaker should have something important for him/her that is not known, and is soliciting for the information from his/her interlocutor. Thus, it can be said that the speaker produces the sentence with the intention that the following discourse be about that information. In other words, the content of the extracted wh-word is to be the theme or topic of further discourse and in this sense is dominant in the utterance. Then it is clear that a non-dominant part of a sentence cannot lend itself to the extraction process, for the process inevitably leads to conflict in dominance relation in a sentence.

Erteschik-Shir and Lappin (1979) propose this functional explanation as an alternative to the syntactic (i.e., the Subjacency) approach. They may be right. They show sets of sentences that evidence the involvement of the functional property in the extraction process. Notice that in (9), for example, the semantic content or the semantic transparency of the matrix verb differentiates the acceptability of the whole sentence, even though the two sentences have the same syntactic structure. This may be because such a factor differentiates a dominant part of a sentence.

(9) a. What did you say that he had done?
   b. ??What did the paper editorialize that McGovern had done?

4. Potentials of Functionalism for the Explanation of L2 Acquisition Process

Now, after overviewing the preceding linguistic literature, we are at the point to return to the issue of L2 acquisition of extraction possibility. The most crucial implication of Erteschik-Shir’s proposal to the consideration of language acquisition is that the condition concerning the possibility of extraction is regarded as learnable without any a priori knowledge base of the kind Chomsky assumes. For, it seems that all the fundamental notions of functional nature such as the speaker’s intention, the hearer’s attention, and the topic of conversation that are necessitated to define the idea of dominance can be captured by general cognitive ability of human being. This being so, it is probable that conflict in the dominance structure is also learnable. Then, naturally, L2 learners as well as children acquiring their L1 should have potential to notice the
 awkwardness of the sentence in which the conflict is involved.

Remember that the consideration within the Subjacency framework does not provide us with a definite answer as to whether L2 learners can identify the ungrammaticality of sentences like in (8) above. Here, it may be important to consider the issue in terms of dominance. If the relevant discourse property and its conflict are learnable at all, it is likely that some L2 learners are sensitive to the awkwardness of sentence (8), for example. This should be possible even if the learners are not aware that the awkwardness they find is due to the conflict in dominance structure. Other learners may, however, treat sentence (8) just as a string of words and analyze it mechanically without considering semantic potential involved. Suppose that learners try to identify the place of the trace for the extracted wh-word, despite considerable difficulty to be expected. They may reconstruct what is similar to the D-structure in the UG formulation (like the structures in [1]) and understand that it does not involve any collapse in structural configuration. Alternatively, they may conceive of the corresponding declarative sentence (e.g., sentence [6] for sentence [8]) and find that it is well-formed. Restarting from this point, the learners may suppose that sentence (8) derives from that “protostructure” by applying to it the rule that they know is correct: A wh-question is formed by moving a wh-word to the sentence initial position (and by inserting an auxiliary). (In many cases, this rule appears to be the target of formal instruction.) Then, sentence (8), which is regarded as generated by applying the correct rule to the well-formed protostructure, may be judged as grammatical in terms of the mechanical process involved. It is likely that learners in earlier stages of L2 acquisition tend to think this way, especially those in a foreign language environment in which there is little opportunity to use a L2 meaningfully. Further prediction is that learners may show improvement in their judgement as they get more opportunity to use the target language communicatively and become capable of considering semantic or functional potentials of sentences. These claims should, of course, be empirically tested in future research.

5. Conclusion

Although a considerable portion of the present paper has been dedicated to an overview of L1 and L2 literature and the discussion of its implications relatively short, it was a necessary procedure. The outcome is not trivial in any sense. In the present paper, we have considered the implication of the claim that certain sentences are judged as unacceptable because of the conflict in the dominance relation involved in them. If the functional property plays an important role concerning extraction possibility, attempts at explaining L2 acquisition of the matter have to incorporate the idea into its scope. We have discussed the possibility of explaining the learner behavior observed in the previous studies in this regard. From the functional point, it is possible that some learners notice the awkwardness of the relevant sentences while others do not, and that this makes the whole picture opaque and difficult to interpret.

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This paper suggests that the field of L2 acquisition research will bear more fruit if functional properties are taken into consideration. This seems to be what L2 acquisition research has neglected so far. Now, it may be time for L2 researchers to pay due attention to extragrammatical properties of language. Complete explanation of the highly complicated matter of L2 acquisition would be impossible if we exclusively focused on syntactic properties of language and kept ignoring its semantic/functional potentials.

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Notes

1. Extraction process is assumed to be involved in topicalization, relativization, and the formation of cleft sentences as well as wh-question formation. The present paper focuses on the extraction of wh-words in wh-question formation.

2. Most recently, Chomsky (1992) suggests that a wh-question is generated by “copying,” rather than extracting of a wh-word (copy theory of movement). In this paper, we presuppose the traditional extraction theorem, for the theoretical amendment has no direct relevance to the present argumentation.

3. Before the eighties, linguists assumed individual rules to prohibit extraction from different structures such as:

   1) Complex Nouns:
   e.g. John knows the fact that Mary married Bill.
   John criticized the girl who had attacked his theory.

   2) Sentential Subjects:
   e.g. That Mary hit John is known to everybody.

   3) Wh-Islands:
   e.g. John wonders how Mary has completed the task.

4. There is another formulation of Subjacency in which CP (=S') instead of IP is assumed to be a bounding node for English. In fact, to decide precisely what categories count as bounding nodes in any given language is one of the difficult requirements of this framework.

5. Those studies that deal with parametric variation of the bounding node and its effect on L2 acquisition process (e.g., Uziel, 1993) are not discussed in the present paper.

6. The experiment was also concerned with Empty Category Principle, another subcomponent
of UG. We do not touch upon this part of their experiment.

7. Wh-questions that do not involve Subjacency violation were also included in the test. By comparing learner judgements on these sentences with those on ungrammatical ones, the researchers found a general tendency for learners to give the answer "ungrammatical" to both types of sentence. This is why the researchers do not strongly argue for the operation of UG in L2 acquisition.

8. In Shachter's experiment, Indonesian, Korean, and Chinese learners were tested. We focus on the judgements by Korean learners here, since Shachter claims that, among these, only the Korean language is free from movement rules in a strict sense.

9. Yamaoka (1988) suggests the possibility that learner judgements come closer to the native-speaker standard as the learners' overall proficiency in English increases. If this is the case, a clear-cut result may well not be expected for learners taken as a whole. This is an interesting suggestion. Given, however, that negative evidence (i.e., explicit explanation of ill-formedness of sentences) is not provided — this is one of the assumptions in the experiments of the type discussed — it is necessary to consider that some triggering evidence indirectly facilitates the acquisition of the principle of Subjacency. It is not clear, however, precisely what works as the indirect trigger in the acquisition process, nor do we find any serious effort made so far for specifying the trigger. The explanation in this line, therefore, seems to be inconclusive.

Another solution may be to claim that L2 learners have partial access to UG, as some researchers do. In this paper, however, we seek for a different way of explanation that is more psychologically real.

10. Refer to Erteschik-Shir and Lappin (1979, Footnote 18) for their short comment on the differences between the ideas of dominance and themehood.

11. Spanish and Italian are assumed to have a different value of the parameter for Subjacency than English: NP and CP are considered to work as bounding nodes in these languages. From the functional viewpoint, this might be reconsidered to be a matter of difference in the way semantic/funcional properties are realized in the form of syntactic structures, interacting with word order and morphological properties of the languages.

References


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