1

Some Common Goals for Second and First Language Acquisition Research

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The game of language acquisition research can be described as the search for an appropriate level of description of the learner's system of rules. The player can lose in at least two ways: either the forms produced by learners are not predicted by the description, or the description predicts occurrences of forms never produced. At the level of word classes, for example, it would be inappropriate to describe a learner as having the form class called "nouns" if, in fact, s/he were only restricting it to concrete nouns, or to the form class called "verbs" when only action-related verbs constituted the class. At the level of word combinations, similarly, given an utterance *The boy swatted the fly*, we could describe it at any number of different levels.

(1) |BOY| + |SWAT| + |FLY|
(2) |+HUMAN,+ANIMATE NOUN| + |+ACTION VERB|
     + |-HUMAN,+ANIMATE NOUN|
(3) |AGENT| + |ACTION| + |PATIENT|
(4) |SUBJECT| + |VERB| + |OBJECT|
(5) |WORD| + |WORD| + |WORD|

Which of these levels should be chosen as the appropriate description is primarily an empirical question. (1) would fail if our learner produced the utterance *The man killed the frog*. The system is more productive than it claims. (2) fails given the utterance *The fly ate the saccharin*, (3) given the utterance *The fly received a swat*, and (4) if our learner showed evidence of *Swat the boy the fly* or *The boy the fly swat* being within his/her range of possible utterances. These are cases where the description is shown to be underdetermined by the data. The descriptive categories are too narrow. On the other hand, (5) would account for all three-word combinations in the language, but clearly it is too general and fails to capture the system's salient characteristics. (4) fails if only agents with actional verbs appeared in sentence-initial position, and utterances such as *The*

sirloin satisfied Peter, which would motivate the more general description in (4), were never produced. In such cases, the description is overdetermined by the data.

The reason for my burdening the reader with such obvious reasoning reminiscent of an introductory class in descriptive linguistics is to motivate the basic point of my paper: both first and second langauge acquisition research share this basic question of determining the primitives upon which the system is built. What is the appropriate scope of the linguistic categories upon which rules operate? How does the learner get there?

One need not go through the entire exercise of demonstrating that in descriptions of adult language knowledge, the most elegant and parsimonious description of syntactic categories is indeed quite abstract and is best stated independently of semantic considerations. In English, the semantic distinction between process and state cuts across both verbs and adjectives, and linguistic rules operate on the syntactic classes independent of the semantics involved. Witness pairs of sentences such as *Sam resembles Mary/Sam is similar to Mary* and *The dragon is kicking Martha/The dragon is being violent to Martha.* Similarly, while it is a statistical generalization that the subject of a sentence tends to be the agent of the verb, that is hardly always the case. The subject of a sentence appears to be independent of any particular semantic role. It is a puzzle how the learner enters this seemingly semantically obscure system.

Short of taking a radical nativistic view, there are several possible solutions to this problem. In one approach, the learner would begin by taking advantage of the correlation between syntactic and semantic categories. For example, most subjects tend to be agents, most nouns things, most verbs actions, and so forth. Then at some point, there is a reorganization of the semantic categories into broader syntactic classes. This view, taken by Bowerman(1973) and de Villiers and de Villiers (1978) among others, is perhaps the closest to much of the data from early word combinations, yet in general they leave open for future research the task of specifying how the reorganization might take place.

Maratsos and Chalkley (in press) argue that the learner takes advantage of the fact that the privileges of occurrence of form classes are correlated across different syntactic constructions. Adjectives and verbs can be differentiated by taking note of the different syntactic contexts in which they occur. In addition, categories such as "subject" are seen as reifications of nouns which can enter into the semantic relationship expressed in the argument structure of different classes of verbs. Depending on the verb, the first noun phrase argument can be agentive, experiencer, and so forth.

In my view, second language acquisition research has largely ignored this basic set of questions as to how the learner enters the system. It has taken what I will call the "post-reorganizational view," that is, the syntactic categories at the end state of the attempted descriptions above are taken as givens for the second language learner. Under the post-reorganizational view, the learner already has

the syntactic categories, waiting for the second language input to be plugged into them, and forms hypotheses as to how they interrelate into particular syntactic structures such as negatives, interrogatives, and so forth. Questions concerning the nature of language transfer, of course, have been mainly directed at this latter level (see Hakuta and Cancino, 1977).

One reason, perhaps, why the post-reorganizational view has been so prevalent in L2 research is because semantic constraints in the L1 categories have been considered to be tied in with cognitive development. The view that cognitive development is not a consideration in L2 acquisition is implicit in attempts to account for differences in the patterns of L1 and L2 learners on precisely these grounds. Dulay and Burt (1975), for example, in accounting for the different difficulty orderings for grammatical morphemes in first and second language learners, write:

> It seems intuitive that children who are acquiring their first language have to deal with both semantic and syntactic information. However, six, seven, and eight year old children learning a second language need not struggle with semantic concepts they have already acquired, such as concepts of immediate past, possession, or progressive action (p. 211).

This view might be reinforced by Lightbown's (1977) recent work indicating that a large proportion of early L2 utterances can be accounted for by the same set of semantic relations as found in L1 speech, but that for L2 learners, the semantic relations are all used from the beginning rather than showing the progression typically found in L1 learners. This would suggest a role for cognitive development in L1 but not in L2 acquisition.

Excluding semantic considerations from an analysis of L2 acquisition simply because cognitive development does not play a role in second language acquisition would be somewhat premature. As Schlesinger (1974) points out, cognition does not equal the semantics of a language. The relationship is a rather complex, interactive one. The best demonstration of this complex relationship is through the fact that the cognitive categories from which languages draw are not uniform across languages. For example, while many languages observe the distinction between alienable and inalienable possessions, English does not. Gender is another cognitive category which is expressed to widely varying degrees in different languages. While cognitive development may be a pace-setter for cognitive categories available to the learner, the semantics of each particular language is often specific to that language. Thus, in learning a second language, semantics could be an important consideration insofar as the learner must decipher the clusters of cognitive categories from which the second language draws its semantic distinctions.

How might a second language learner go about learning the form classes of the second language? We need to go back to the L1 evidence for starters. Maratsos and Chalkley (in press) argue that in learning English form classes, in particular adjectives and verbs, children are quite good at *not* violating the

formal syntactic categories across semantic distinctions. Thus, in reviewing the relevant literature, they fail to find errors such as *He's angrying,* where *-ing* is extended to process adjectives. This would be an expected type of error if the child were classifying words semantically. In addition, when children over-generalized the regular past tense *-ed,* they were equally likely to make this overgeneralization on process verbs as on nonaction verbs. Maratsos and Chalkley conclude that "children find it natural to define the formal units for a semantic-distributional pattern according partly to the appearance of terms in other distributional-semantic patterns" (p. 40).

For the second language learner, one obvious possibility is that s/he follows exactly the same pattern as first language learners, guided by the semantic-distributional properties of the input language. We would expect similar observances of syntactic boundaries under this hypothesis. Another possibility would be that in fact one may find learners at a certain age range to be more sensitive to the semantic similarities across syntactic classes, when they have come to recognize both adjectives and verbs as, say, "words." This would result in errors across syntactic classes. A third possibility, addressing the question of transfer from the native language, is also possible. This would claim that in the native language of the speaker, words would be classified according to the semantic-distributional properties of the particular language. The task of learning the second language would be seen as deciphering what privileges of occurrence the native language form classes (NL/FC) would have in the target language. Thus, in this hypothetical case, lexical items are in a given FC for NL. Say that the learner then finds an equivalent for a particular member of the native language form class, NL/FC_i, in the TL. Within the TL, the structure is such that this lexical item is a member of TL/FC, specifically TL/FC_j. As the learner acquires new lexical items corresponding to NL/FC in the TL, once the learner discovers the distributional properties of TL/FC, it would be quite efficient for the learner to go ahead and assume that all equivalent words in the target language for NL/FC could take on the distributional properties of TL/FC. If the NL and TL do not agree on membership of terms in NL/FC and TL/FC, we would predict certain errors in form class of the target language.

There is at present very little data to decide between these possibilities, let alone whether there may be effects of the age of the learner. The possibility outlined in the transfer hypothesis above has some support in my own data from Uguisu (Hakuta, 1976), where she in fact made errors of the following sort: *you're mistaking.* In Japanese, *mistake* is most often used as a verb as opposed to English, where it is a noun. Thus, Uguisu may have extended the "-ing-able" property of her class of verbs in Japanese, including *mistake.* Such errors, however, are salient to the researcher. At least, it is hoped that most observant researchers who have run across similarly striking errors in their protocols would have reported them. That such errors have not been reported in the literature forces one to question the generality of my particular example. At any

rate, L2 studies with a focus on the acquisition and representation of form classes should be quite informative. With L2 learners particularly, we need not rely solely on data from form class violations in spontaneous speech. Older learners are amenable to judgments of acceptability, sorting tasks, and other clever ways of tapping the organization of their linguistic categories for the language they are in the process of learning. In addition, one of the most important considerations about form classes is that their privileges of occurrence are correlated. Given a sentence *Gutch you,* you know other contexts where *gutch* can appear. *Her gutching was considered by the police to be disgusting, Don't gutch me,* and where it cannot: *His gutch ran out.* By asking learners to judge or produce sentences of this sort, their knowledge concerning correlated privileges of occurrence can be explored. In short, take advantage of the fact that adults can follow detailed instructions.

In the domain of syntax, there is some recent evidence indicating rules to be semantically or lexically bounded. For example, Sinclair, Sinclair and DeMarcellus(1971) report that children fail to comprehend the passive version of sentences involving the verb *follow* until much later than other verbs, such as *hit* or *kick.* Thus, *The horse was followed by the cow* is much harder than *The horse was kicked by the cow.* Such evidence goes against the claim that there is a rule which transforms the order of the two nouns about a transitive verb without making restrictions as to the individual lexical items involved. In other words, if the rules operated on categories NP and VP, as in the standard transformation account (Chomsky, 1965), we would expect performance to be homogeneous across lexical items. Maratsos, Kuczaj and Fox (1977) report a pair of studies in which they systematically investigated the effect of verb type on comprehension of reversible passive sentences. They compared four and five year olds' comprehension of sentences with verbs which were either actional (e.g., *hold, shake*) or nonactional (e.g., *remember, see*). The subject of actional verbs can be described semantically as the agentive role, while the subject of the nonactional verbs is described as the experiencer role (Fillmore, 1968). Although the children performed equally well on active sentences involving both types of verbs, they did significantly better on passive sentences with actional verbs. Thus, it appears that children at this stage in development do not have a generalized passive rule operating on categories such as Subject. Rather, they can be regarded as lexically specific. That is, their formulation of the rule centers about verbs which take agents as their first NP argument and patient as their second NP argument, and not verbs which take the experiencer role as their first NP argument. In this way, their rules are also semantically bounded.

De Villiers (in press) argues that there are inherent biases in the accessibility of subject position in formulating passive sentences, depending on the semantic relation of the noun to the verb. She used a modeling paradigm in which children were exposed to certain kinds of passives and subsequently tested for production of passives in novel contexts. Even controlling for

frequency of opportunities to produce each type of passive, her subjects found passive sentences easiest to produce in the following order:

Type 1. ANIMAL + ACTION + ANIMAL
    (e.g., The frog was squirted by the turtle.)
Type 2. INANIMATE THING + ACTION + ANIMAL
    (e.g., The ball was thrown by the rabbit.)
Type 3. INANIMATE THING + NON-ACTION + ANIMAL
    (e.g., The dress was worn by the elephant.)

Her subjects were differentially exposed to either passive models of Type 1 or Type 3, yet both groups found Type 1 the easiest to produce as passives. Although the study is preliminary in nature, it does suggest the semantically bounded nature of grammatical rules. The question, of course, is the origin of such biases in promotion of nouns to subject position. For example, do such biases exist in native adult speakers as well? Could we talk about degrees of membership in grammatical categories, with there being prototypical and peripheral members? The analogy between such a view and recent work in concept formation (e.g., Rosch and Mervis, 1975) is intriguing and has not escaped notice (de Villiers, in press; Bates and MacWhinney, 1978). It is a promising area for collaborative research between psychology and linguistics, since independently motivated linguistic evidence has been used by Ross(1973, 1974) to argue for nondiscrete grammars based on implicational hierarchies.

For purposes of the present paper, it is sufficient if I have conveyed the impression that the trend within L1 research seems headed in the direction of decomposing grammatical categories into semantic and distributional properties. Just as the trend within linguistics recently has been to capture significant generalizations at the lexical level (Bresnan, 1978), the trend in L1 is to search for significant variations between individual lexical-items within grammatical categories. It is not clear at this point whether ultimately the adult speaker would come to unify these decomposed properties under increasingly abstract categories like "subject," as would many linguists, or whether the speaker would keep them separate. It is possible that depending on situation- or task-dependent processing demands, different organizational levels of the category will be tapped. These types of questions would have important implications for L2 acquisition at various ages.

Just for the sake of discussion, let me propose a hypothesis open to empirical investigation: learners at the stage in their first language where the rules are semantically bounded will exhibit similar constraints in learning the rules of the second language. On the other hand, learners who have access to more abstract categories in their first language will more readily generalize their rules to the second language across semantic boundaries.

If the hypothesis were true, there is a further consequence regarding the characteristics of the learners' native language that would require attention. This has to do with whether the native language recruits the syntactic category of

subject as central to the system (for example, English and Spanish) or peripheral (for example, Mandarin). In the latter language, the central role is played by a discourse category, topic. Li and Thompson (1976) propose that the world's languages can be classified as being along the continuum ranging from Subject-prominent to Topic-prominent. Li and Thompson's claim is that some languages can be most insightfully described when the notion of subject is taken to be basic, while others are better described when topic is taken to be basic. The most fundamental difference between subject and topic is that the former is considered a sentence-internal notion, while the latter is a discourse notion. Thus, while subjects are always required to have a selection relation with the verb, this need not be the case with topics, which are selected through discourse. It should be noted, however, that the fact that topic is discourse-related does not mean that it is less formal or abstract than subject. Much more linguistic work needs to be done here, but undoubtedly the descriptive system will unveil powerful formal properties. All this to emphasize that this area is new and hence, concomitant with the excitement of novelty, there is the danger of scanty evidence. Li and Thompson give an example from Mandarin, a topic-prominent language:

Nei-chang   huo xingkui xiaofang-dui lai de kuai
that-classifier fire fortunate fire-brigade came adv. quickly
"That fire (topic), fortunately the fire-brigade came quickly."

A corollary to this fact is that the verb determines the subject of the sentence, while topic is defined independently of the sentence. Furthermore, the subject, but not the topic, governs linguistic phenomena such as reflexivization, passivization, equi-noun-phrase deletion, verb serialization, and imperativization.

That the topic plays a prominent role in Mandarin can be easily shown in a number of areas. For example, Li and Thompson argue that topic is always coded by being in sentence-initial position. In addition, the topic takes precedence over subject in controlling coreference. Topics are most conspicuously present in the pervasive "double-subject" construction, such as

Neike   shu   yezi   da
that   tree   leaves   big
"That tree (topic), the leaves are big."

Li and Thompson offer a fascinating argument for the fact that Mandarin, like other topic-prominent languages, rarely has passives.

In subject-prominent languages, the notion of subject is such a basic one that if a noun other than the one which a given verb designates as its subject becomes the subject, the verb must be marked to signal this "nonnormal" subject choice. . . . In topic-prominent languages, it is the topic, not the subject, that plays a more significant role in sentence construction. Any

noun phrase can be the topic of a sentence without registering anything on the verb. It is, therefore, natural that the passive construction is not as widespread in topic-prominent languages as it is in subject-prominent languages (p. 467).

I suspect that there will be interesting differences to be found between cases of second language learning which cross and do not cross the subject-topic distinction. Let us take a hypothetical case of Chinese and Spanish speakers learning English. Under the assumption that the formal categories of subject and topic are established, if they ever are, at similar ages in the native language of the respective languages, a general prediction arises that both Spanish and Chinese learners of English, at the period when their native language system does not exhibit formal properties, will show similar boundedness of English rules. On the other hand, older learners should show a systematic difference as a function of their native language. Spanish speakers are predicted to perform stably in tasks involving the subject, while Chinese speakers will exhibit unstable performance, with possible interpretation of the English subject as being "topic."

The above hypothesis is undoubtedly simplistic and most likely misguided. It should be kept in mind that it is primarily intended to illustrate the kinds of questions that might be asked as a consequence of the search for the appropriate level of describing linguistic categories that are psychologically real. Schachter and Rutherford(1978) have made some important first steps in describing errors in English made by native adult speakers of Japanese and Chinese in terms of the subject and topic distinction. These learners appeared to use the English subject primarily as a topic marker. This line of research is extremely promising for investigating not just the nature of the categories but age-related changes as well.

John Macnamara(1976) recently wrote, quite aptly, that "when an infant, a ten year old child, and an adult learn Russian, the most striking outcome is Russian" (p. 175). The common thread of questions shared by L1 and L2 acquisition research lies in the saga for the nature of linguistic categories. It is by asking this fundamental question that we can start getting insights into the similarities and differences that exist between the two processes. There is much room for collaborative research, not just between researchers interested in L1 and L2 acquisition, but also with cognitive psychologists interested in concept formation, philosophers interested in the nature of categories, and linguists open to the possibility that linguistic categories are inherently nondiscrete.

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