13 First Language Acquisition

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0 Introduction

This chapter provides a survey of research on the acquisition of the Japanese language. With the exception of the first section, which is a historical overview, it is highly selective in the sense that it focuses on research which deals with the problem of why Japanese-speaking children are able to acquire the core portion of Japanese grammar despite the fact that relevant experience available to them is severely limited (i.e. under the "poverty of the stimulus" situation (e.g. N. Chomsky 1981b)). In other words, it is an attempt to explore the "logical problem of language acquisition" (Hornstein and Lightfoot 1981, C. L. Baker and McCarthy 1981) or "Plato's problem" (e.g. N. Chomsky 1975) from the perspectives of Japanese grammar.

For example, every adult native speaker of Japanese can tell that (1) is ambiguous in that *sannin* "three people" can be predicated of either *dansi gakusei* "male students" or *hahaoya* "mothers."

(1) Sannin   no dansi gakusei no hahaoya ga   gakkoo e kita.
    three people of male students of mothers Nom school to came
    "Mother(s) of three male students/three mothers of male students came
    to school."

Thus, the subject of (1) *sannin no dansi gakusei no hahaoya* can either mean "mother(s) of three male students" or "three mothers of male students." Notice that in the former case, the number of mother(s) can either be one, two, or three since *sannin* is predicated of *dansi gakusei*, not *hahaoya*, as contrasted with the latter case in which the number of mothers must be three.

When the *sannin*-phrase "floats" to a postsubject position as in (2), it can only be predicated of *hahaoya*.

(2) Dansi gakusei no hahaoya ga   sannin   gakkoo e kita.
    male students of mothers Nom three people school to came
    "Three mothers of the male students came to school."

Thus, in (2) it is not possible to conceive that the number of mother(s) is either one or two; it must be three.

We do not attempt to go into the detailed explanation of why this is so. Instead, in the present context, it is sufficient to point out that these facts follow from the interaction among various phrase structural properties and abstract, probably universal, principles involving such notions as "c-command." If this is so, a very interesting question arises: i.e. where does the relevant knowledge of Japanese come from?

The question is interesting because it is highly unlikely that the knowledge stems from the "general learning mechanism" and experience. Here, we assume that biologically predetermined "Universal Grammar (UG)" plays an important role along with its interaction with experience. Thus, while children exposed to Japanese have to fix many properties of Japanese phrase structure like its head-finalness on the basis of experience, UG provides them with information concerning properties of "operators" such as *sannin*.

In this chapter, we will review some of the relatively recent work on language acquisition that has direct bearing on the correctness of the acquisitional scenario just mentioned. This chapter is also selective in the sense that it is more or less limited to syntax. There has been much work on other areas of Japanese, particularly on phonology and pragmatics, as well. Those readers who wish to obtain a survey from broader perspectives are referred to Clancy (1985).

1   Historical Overview

It may seem a truism that the study of language acquisition should be preceded by a substantial understanding of the nature of grammar in general as well as the nature of particular grammars in order for it to be a serious intellectual endeavor. However, such a truism had not been fully recognized until quite recently in spite of the long history of the study of language acquisition.

C. Chomsky (1969) represents one of the very first such attempts to connect grammatical theory and language acquisition. In her monograph, C. Chomsky takes up four grammatical structures including those related to control and binding that were considered "exceptions" from the perspectives of the then current theory and analyses, and attempted to show experimentally that the acquisition of those structures are in fact delayed beyond five years of age in some instances.

For example, C. Chomsky attempted to show that children encounter difficulties in coming to grasp the fact that the controller of PRO in (3) is the subject

of the matrix clause, in contrast with unmarked cases like (4) in which the controller is the object of the matrix.

(3)   John promised Bill PRO to leave

(4)   John told Bill PRO to leave

Tavakolian (1981), which is a collection of reports mainly carried out at the University of Massachusetts under the guidance of Thomas Roeper, represents the opening of the new era of the study of language acquisition trying to bridge language acquisition research and findings of grammatical theory. In these studies, various properties of Universal Grammar including binding and control are taken up, and it has been claimed that it has been shown that those UG-related properties do in fact constrain language acquisition from the very beginning.

Otsu (1981) is another work that represents the new trend from a slightly different perspective. He has taken up the subjacency effect with respect to relative clauses. Subjacency is a universal principle that has been proposed in order to explain some kind of locality effect. Thus, (5) is not grammatical since the extraction of *wh*-phrase has taken place out of a relative clause.

(5)   *What$_i$ is John drawing a monkey [that is drinking milk with t$_i$]?

If subjacency (or some other universal principle(s) from which the subjacency effect follows) is part of UG, and thus innate, children do not have to learn from experience that the extraction of *wh*-phrase out of a relative clause is banned. However, infants would not be able to judge that (5) is bad even if subjacency is part of UG, since there are a number of language-specific properties that they have to learn in order to make such a judgment: the structure of English relative clauses, among other things. However, English-speaking children should be able to judge that (5) is ungrammatical once they learn those language-specific properties if subjacency is part of UG. And this is what Otsu (1981) has shown.

Although properties related directly to UG are generally expected to emerge once necessary learning like the learning of English relative clauses in the above example has taken place, they do not have to. Just like puberty, which is biologically determined, those properties could emerge later if their emergence is controlled by maturation. For example, Borer and Wexler (1987) have suggested that maturational factors should be involved in the emergence of UG-related properties such as A-chain formation, thereby explaining the relatively late emergence of English passives as compared with *wh*-questions.

Those studies mainly use the acquisition of English as their database. In contrast, similar research on the acquisition of Japanese was scarce in those days, partly because the way the properties of UG reflect on the nature of

Japanese grammar was not so transparent despite much important early work on Japanese grammar, notably Kuroda (1965a).

Introduction of the so-called principles-and-parameters approach to Universal Grammar (PP approach to UG) (e.g. N. Chomsky 1981b) has given a very strong impetus to the studies of language acquisition through the notion of parameter setting. Hyams (1986), for example, takes up the so-called null-subject phenomena in the early speech of English children as represented by such utterances as (6) and (7), and attempts to account for the phenomena in terms of the early non-adult-like setting of a relevant parameter.

(6)   Throw it away.

(7)   Want go get it.

More concretely, Hyams claimed that there is a parameter that divides languages into two basic types, i.e. null-subject languages like Italian and non-null-subject languages like English, and the grammar of the children who produce such forms is just like that of Italian-speaking children with respect to the relevant parameter setting. What is intriguing is that such a theory makes very interesting predictions about acquisition. Thus, such children are also expected to produce erroneous, i.e. nonadult, forms as a result of the missetting of the parameter: e.g. lack of expletives such as *it* and *there* and lack of auxiliary *be* and modal auxiliaries. Also, these phenomena are expected to disappear across the board since they stem from a common cause, i.e. parameter missetting. While Hyams's theory had to undergo many revisions because the prediction of the original formulation was not fully borne out, the importance of the research style that she has developed remains unchanged.

These studies have made very important contributions to the study of language acquisition, in particular to the construction of the theory of language acquisition. While it is true that they also contributed to the study of grammatical theory in that they provide grammatical theory with confirming (or disconfirming) evidence from acquisition, the contribution is more or less unidirectional, i.e. from grammatical theory to acquisition.

There are relatively recent contributions in the opposite direction. The most important is the learnability consideration. There is overwhelming evidence that direct negative evidence is not necessary in language acquisition. When a child receives a direct feedback from his or her environment to the effect that a form she or he has produced is ungrammatical and she or he uses such feedback for grammar construction, she or he is said to have used direct negative evidence.

Observation of typical conversations between children and their parents would instantly suggest that parents are in general insensitive to the grammatical properties of children's utterances. They do not correct children's

"errors." The following example is a dialogue between a two-year-old and her mother (data collected by Ai Okubo, taken from Kokuritsu Kokugo Kenkyujo 1982: 79–80).

(8)   Child: Kondo,   syooboo zidoosya.
               this time fire   engine
               "Here comes a fire engine."
      Mother: Hai, kondo wa syooboo zidoosya ne.
               yes
               "Yes, a fire engine this time."
      Child: Kiiro, kiiro zidoosya.
               yellow   car
               "A yellow, yellow car."
      Mother: Hai. Ara?
                     oh
               "Yes. Oh!"
      Child: Aoi zidoosya.
               blue
               "A blue car (this time)."

Notice that in his second turn, the child said *kiiro zidoosya* "a yellow car." He should have said *kiiroi zidoosya* because *kiiroi* is the correct prenominal adjectival form while *kiiro* is a noun. In spite of this mistake, the mother did not even try to point that out.

   Some adults on some occasions attempt to correct children's mistakes. The typical reaction is that children ignore the correction. The following is a dialogue between a three-year-11-month-old and his father that I collected.

(9)   Child: Otoo-tyan, mado   aite.
               Daddy   window open
               "Daddy, the window opens."
      Father: Mado   akete daro.
               window open you mean
               "You mean, open the window."
      Child: Un, mado   aite.
               Yeah window open
               "Yeah, the window opens."
      Father: Mado   akete dayo.
               window open you should say
               "Open the window, you should say."
      Child: Iikara, mado   aite yo, otoo-tyan.
               anyway window open   Daddy
               "Anyway, the window opens, Daddy."

In this dialogue, the child incorrectly used *aite*, the *te*-form of an intransitive *aku* "to open," and the father prompted to use the correct *akete*, the *te*-form of the

corresponding transitive *akeru* "to open." In spite of the father's efforts, the child stuck to *aite* until the end of the dialogue.

If direct negative evidence is not necessary for language acquisition, UG must be constructed such that acquisition of particular grammars is possible without direct negative evidence.[1]

With the introduction of the PP approach to UG, Japanese grammar has become one of the most intensely studied particular grammars (e.g. Saito 1985, Fukui 1986). In spite of the progress in research on Japanese grammar within the framework of the PP approach to UG, there has not been a comparable progress in the studies of Japanese acquisition. This chapter is an attempt to survey some of the major findings in these efforts, and at the same time to clarify issues to be studied in the future research.

# 2 Minimal Linguistic Background

The following discussion provides the minimal linguistic background to read the remainder of this chapter presupposing basic understanding of the nature of Japanese grammar. It is not intended to be a full exposition of Japanese syntax by any means, and hence motivations for the following analysis are not provided.

The basic transitive pattern of Japanese is as exemplified in (10).

(10) Taroo-ga   sono hon-o   katta.
      Taro-Nom the   book-Acc bought
      "Taro bought the book."

As shown, the subject NP receives the Nominative Case and the object NP receives the Accusative Case. When the verb is an action verb as in (10), the subject NP usually bears the Agent role, and the object NP the Theme role.

We will assume in this chapter that the near-surface phrase structural representation of (10) is (11).

(11)
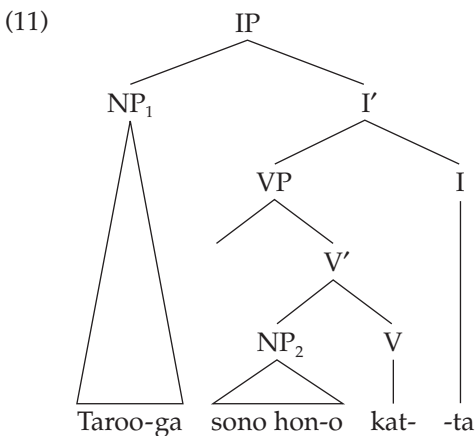
NP$_1$ represents the surface subject position, and NP$_2$ represents the surface object position. We will also assume that the surface subject NP$_1$ originates within VP, more specifically the specifier position of V, but the foregoing discussion does not hinge on this assumption, which is generally called the "VP-internal hypothesis" (e.g. Y. Kitagawa 1986, Kuroda 1988).

   In addition to the basic word order exemplified in (10), a "scrambled" version is also possible as in (12).

(12)   Sono hon-o   Taroo-ga katta.

   The landing site of the scrambled element such as *sono hon o* in (12) is now under heated discussion, but for the purpose of this chapter it suffices only to assume that it lands somewhere higher than VP.

   We will assume (13) as the structure of negative sentences.
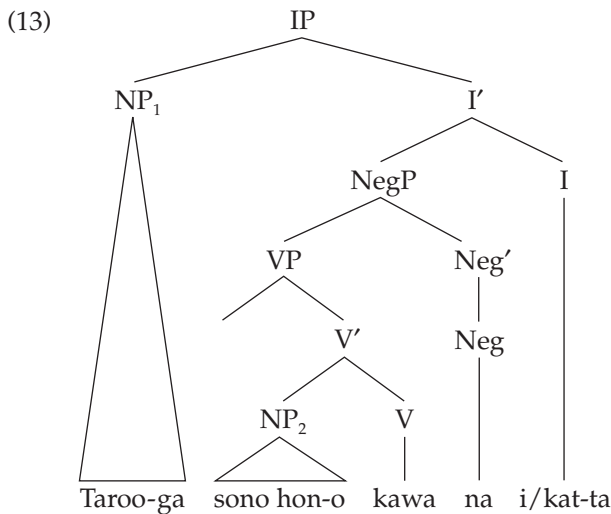
(13)

nai is the negative marker, and selects the projection of a non-finite Irrealis verbal form (*mizen-kei*). Notice that tense element such as the past marker *ta* is borne by *nai*, not by the verb.

3   Case Markers and Scrambling

In the late 1970s, there was a group of experimental studies, such as Hayashibe (1975) and K. Sano (1977), among others, concerning children's comprehension of Japanese transitive sentences. Their stimulus sentences contain transitive

sentences with the "canonical" (i.e. non-scrambled) word order such as (14) and their scrambled counterpart such as (15).

(14)   Kame-san -ga   ahiru-san -o   osimasita.
      turtle   Nom duck   Acc pushed
      "A/The turtle pushed a/the duck."

(15)   Ahiru-san-o kame-san-ga osimasita.
      "A/The duck pushed a/the turtle."

The task is act-out: namely, subjects are asked to act out what the stimulus sentence means by manipulating toy animals put on the table in front of them.

Results of these studies have almost consistently shown that there is a group of children, sometimes up to five years old, who have difficulties in comprehending scrambled sentences like (15). Those children typically tend to take the first NP as the agent of the action denoted by the verb, and the second NP as the theme. Those results had generally been considered to indicate that scrambling is acquired fairly late, even as late as children's fifth year.[2]

What Otsu (1994a) has shown is that those results are experimental artifacts. Specifically, it is pointed out that the scrambled NP must have been established as a discourse topic in order to make the use of scrambled sentences natural. In the previous studies, stimulus sentences are given without discourse. As such, use of scrambled sentences like (15) sounds awkward.

Thus, if we add a sentence prior to (15) with a minimal change in (15) itself as well, it sounds perfectly natural:

(16)   Kooen ni ahiru-san ga   imasita.
      park   in duck   Nom is-Pol-Past
      Sono ahiru-san o   kame-san ga   osimasita.
      the   duck   Acc turtle   Nom push-Pol-Past
      "There was a duck in a park. A turtle pushed the duck."

In (16), *ahiru-san* "duck" is introduced into the discourse context as a discourse topic by the first sentence. Once it becomes the discourse topic, it is not only all right but even more natural to begin the second sentence with *ahiru-san* fronted by scrambling. Thus, there is a discourse-contextual reason to use scrambled sentences. See also Masunaga (1983) for similar observations.

In Otsu (1994a), subjects in the experimental group received each stimulus sentence with another sentence designed to establish the first NP of the stimulus sentence as the discourse topic, just as we have seen in (16). On the other hand, subjects in the control group received stimulus sentences without any discourses as in the previous studies. As expected, those three-year and four-year subjects in the experimental group virtually had no difficulty in comprehending

such sentences, while many subjects in the control group showed the same error pattern as in the previous studies.

This result suggests that the difficulty that children showed in comprehending scrambled sentences in the previous studies are experimental artifacts caused by lack of attention to discourse factors governing the use of scrambled sentences. It also suggests that if we remove those factors that caused the experimental artifact, children as young as three show no difficulty in comprehending scrambled sentences. Such a result is not surprising at all in view of the fact that children do not have to learn much in order to be able to handle scrambled sentences.[3]

4   Case Marker Drop

In colloquial speech, Case markers can sometimes drop. Examples (17) through (20) constitute the basic set of data concerning this Case Marker Drop (CMD) phenomenon.
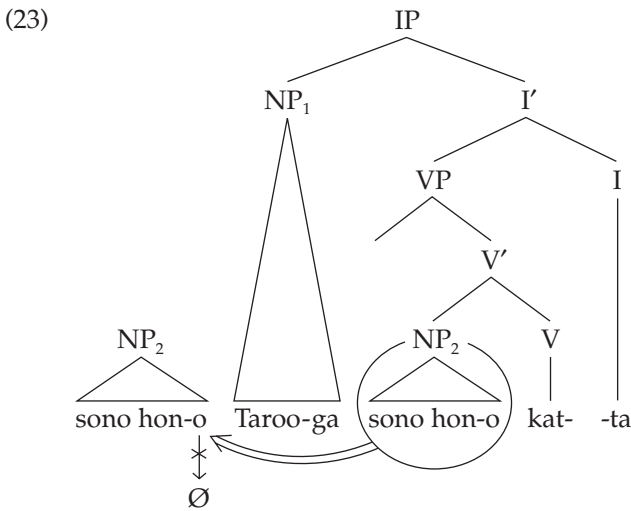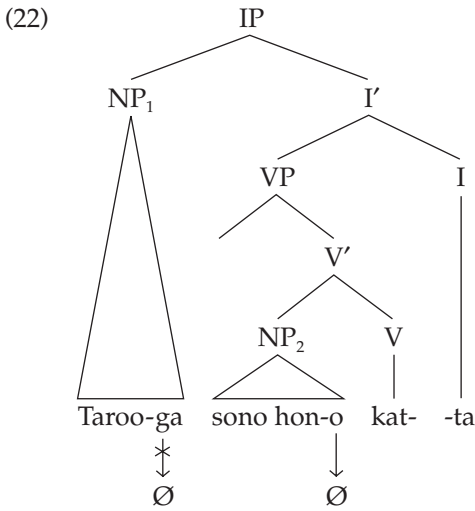
(17)   Taroo-ga   sono hon-Ø katta.
         Taro-Nom that book   bought

(18)   *Taroo-Ø   sono hon-o katta.

(19)   *Sono hon-Ø Taroo-ga   katta.

(20)   *Sono hon-o Taroo-Ø   katta.

There is still much to be discovered about CMD including possible dialectal variations, but the facts in (17) through (20) seem to be fairly straightforward for speakers of the Tokyo dialect.

Assuming that the basic Japanese phrase structure is (13) and that the landing site of a scrambled element is somewhere outside VP, the above CMD data set can be accounted for by the following surface condition (21).

(21)   When an NP is adjacent to and c-commanded by V, the Case marker attached to it can drop. (Takezawa 1987: 126)

In (17), NP *sono hon* is adjacent to and c-commanded by V *katta*, and therefore the Case marker can drop. In (18), NP *Taroo* is outside VP, and thus is not c-commanded by *katta*. Hence, no CMD is allowed. The same account applies to (19). In (20), the scrambled phrase *sono hon* is outside VP, and is not c-commanded by *katta*. Again, CMD cannot take place. The situation is illustrated in (22) and (23).

(22)

```
                    IP
          _____/  _____
        NP₁                   I'
         /\           _____/ \
        /  \         VP         I
       /    \       / \          |
      /      \     /   V'        |
     /        \   /   /  \       |
    /          \ /  NP₂   V      |
   /            \   /\    |      |
  Taroo-ga  sono hon-o  kat-   -ta
      ⋮           ⋮
      ↓           ↓
      Ø           Ø
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(23)

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                              IP
                    _____/    _____
                  NP₁                     I'
                   /\            _____/  \
                  /  \          VP          I
                 /    \        / \           |
                /      \      /   V'         |
               /        \    /   /  \        |
      NP₂     /          \  / NP₂    V       |
      /\     /            \ ( /\ )   |       |
     /  \   /              \(/  \)   |       |
  sono hon-o  Taroo-ga  sono hon-o  kat-   -ta
      ⋮
      ↓
      Ø
```

Otsu (1994b) has attempted to show that young Japanese-speaking children show the same sensitivity to CMD as adults, thereby showing in turn that those children's grammar generates hierarchically organized phrase structures like (22) and (23).

In one of the two experiments reported in Otsu (1994b), ten three-year-olds and ten four-year-olds were interviewed. The task is sentence-completion. The subject is shown a picture of someone involved in some action: e.g. a mother eating a watermelon. The experimenter gives the following instruction to the subject: "Can you tell me about this picture? First, can you begin with *X*?" *X* in the instruction is either the word corresponding to the Agent or the Theme of

the action denoted by the verb of the sentence that the subject is to produce. No Case marker is added to X. (24) is an example.

(24)   Kono e-   nituite ohanasi-site kureru? Mazu, *okaa-san*-de
       this   picture about tell   can you first   *okaa-san*
       hazimete   ne?
       with begin please
       "Can you tell me about this picture? First, can you begin with *okaa-san*?"

   If the instruction is (24), the following is the set of possible and impossible answers:

(25)   a.   Okaa-san-ga suika-o   tabeteiru.
             mother-Nom watermelon-Acc eating
             "Mother is eating a watermelon."
       b.   Okaa-san-ga suika-Ø   tabeteiru.
       c.   Okaa-san-ga   tabeteiru.
       d.   *Okaa-san-Ø   tabeteiru.
       e.   *Okaa-san-Ø suika-o   tabeteiru.
       f.   *Okaa-san-Ø suika-Ø   tabeteiru.

In (25c) and (25d), there is no mention of the Theme. Such sentences are possible if the speaker thinks that the hearer, i.e. the experimenter, and the speaker assume that they are talking about the same Theme. Notice that (25d) is illformed because the *ga*-phrase is adjacent to but is not c-commanded by the verb.

   When *X* in (26) is the Theme, e.g. *suika* "watermelon," the following is the set of possible and impossible answers:

(26)   a.   Suika-o   okaa-san-ga tabeteiru.
             watermelon-Acc mother-Nom eating
             "Mother is eating a watermelon."
       b.   *Suika-o   okaa-san-Ø tabeteiru.
       c.   Suika-o   tabeteiru.
       d.   Suika-Ø   tabeteiru.
       e.   *Suika-Ø   okaa-san-ga tabeteiru.
       f.   *Suika-Ø   okaa-san-Ø tabeteiru.

Notice that in (26c) and (26d) there is no mention of the Agent for the same reason that we mentioned for (25c) and (25d). It is assumed that the Theme phrase in (26c) and (26d) remains in the D-structure position, thus making the latter wellformed. Notice also that (26b) is illformed because the Agent phrase is not c-commanded by the verb.

   The results succinctly show that there is no single violation of (21). Three-year-olds tend to use shorter forms (for example, while only 3 percent of the responses of the four-year-olds are of the (25c)-type, 30 percent of the

responses of the three-year-olds are of that type), but even in those cases they obey (21), a fact that is shown by the contrast between (25d) (0 percent responses of three-year-olds) and (26d) (50 percent responses).

These results, showing that children at least at the age of three obey (21), indicate that those children's grammar generates hierarchically organized phrase structures like (22) and (23). It should also be pointed out that the above results further support the conclusion of Otsu (1994a) that scrambling is acquired much earlier than previous studies indicate.

These experimental results receive support from a production study on CMD reported in Miyata (1992). In her thesis, Miyata reports results of her detailed analysis of production data of children in a wide age range, but her analysis of production of two- and three-year-olds is the most crucial for the present purposes.

Miyata has found 326 utterances with over subjects in her data. In 279 out of those 326 utterances, there is an overt *ga*. In the remaining 47 utterances, there is no overt *ga*: namely, it has dropped. However, Miyata has found that in almost all such cases, the verbs are stative verbs (e.g. (27); cf. Takezawa 1987) or "ergative" verbs which require a Theme subject (e.g. (28); cf. Miyagawa 1989b). In the latter case the subject phrase arguably remains within VP, thus enabling CMD.

(27)   Kimi-ni nani(-ga)   wakaruno.
       you-Dat what-Nom understand-Q
       "What do you understand?"

(28)   Ame(-ga) hutta.
       rain-Nom fell
       "It rained."

If this analysis is correct, there is virtually no example of *ga*-drop where the appearance of *ga* is actually obligatory.

In contrast to *ga*, the *o*-phrase has dropped in as many cases as 124 out of 161 utterances that contain object. In only 37 utterances out of those 161 utterances is there an overt *o*.

If the above analysis is correct, there is overwhelming evidence from production as well that two- and three-year-olds drop Case markers in accordance with (21). This indicates that hierarchically organized phrase structure is already in children's grammar.

5   *Zibun* Binding

Zibun is generally considered to be a Japanese anaphor whose behavior resembles that of *-self* (reflexives) in English. For example, *zibun* must have its

antecedent in the same sentence. Thus, (29) is acceptable only when *zibun* refers to John, and is not interpretable when it refers to someone else not mentioned in the sentence.

(29)   John$_i$-ga   zibun$_{i/*j}$-no kao-o   kaita.
       John-Nom self-Gen   face-Acc drew
       "John drew his own face."

   Also like *-self*, *zibun* must be c-commanded by its antecedent, as illustrated in (30).

(30)   John$_i$-no otooto$_j$-ga   zibun$_{*i/j}$ no kao-o   kaita.
       John-Gen brother-Nom self-Gen   face-Acc drew
       "John's brother drew his own face."

Those properties can be explained in terms of Binding Condition A in some form or another. The condition basically states that an anaphor must be bound in its governing category, where the governing categories are Ss and NPs.

   However, *zibun* has properties that are distinct from English *-self*. For one thing, the antecedent of *zibun* must be a subject, while *-self* does not show such a restriction.

(31)   John$_i$-ga   Bill$_j$-ni zibun$_{i/*j}$-no koto-o   hanasita.
       John-Nom Bill-Dat self-Gen   matter-Acc talked
       "John talked to Bill about himself."

(32)   John$_i$ talked to Bill$_j$ about himself$_{i/j}$.

We call this the "subject orientation (SO)" of *zibun*.[4]

   Zibun has another interesting property. It can refer to a long-distance subject. For example, (33) is ambiguous.

(33)   John$_i$-ga   Bill$_j$-ni [Ned$_k$-ga   Ken$_l$-ni zibun$_{i/*j/k/*l}$-no koto-o
       John-Nom Bill-Dat Ned-Nom Ken-Dat self-Gen   matter-Acc
       hanasita] to   itta.
       talked   that told
       "John told Bill that Ned talked to Ken about himself."

When *zibun* is bound by a long-distance subject, like *John* in (33), the phenomenon is called the "long-distance binding (LDB)" of *zibun*.

   Katada (1991) and others have attempted to explain these properties of *zibun* by considering it as an Operator that gets to VP successively. When the sentence contains only one clause and hence one VP, *zibun*, originally located within VP, is adjoined to the VP. The subject c-commands *zibun*, and thus can be the antecedent of *zibun*. On the other hand, the object, which is in VP, does not c-command *zibun*, and hence cannot be its antecedent. This is how the SO of *zibun* is accounted for.

(34)
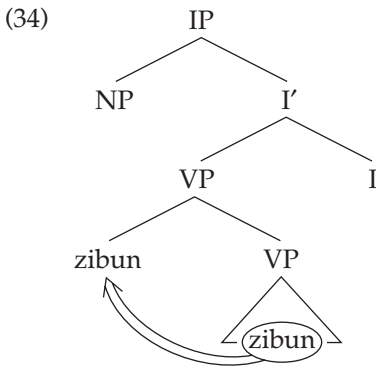
If the sentence containing *zibun* is embedded in other sentence(s), Operator *zibun* raises successively to the upper VP(s), which accounts for the LDB of *zibun*.

There are different analyses of *zibun*, but most, if not all, analyses agree in that the SO and LDB follow in one way or another from properties of UG. From an acquisitional point of view, the early emergence of the SO and LDB is hence expected. Katada's (1991) theory, furthermore, makes a very interesting prediction. That is, it predicts the simultaneous emergence of SO and LDB since they both follow from the Operatorhood of *zibun*.

Otsu (1997) tested 45 subjects in the age range between three and five, 15 subjects in each age group, to test experimentally how these children interpret sentences containing *zibun*. The method is truth-value verification, developed by Stephen Crain (e.g. Crain 1991). Two dolls, Taro (boy) and Hanako (girl), are put behind a screen on the table, and thus they are invisible to the subject. Grover is introduced on the same side of the screen as the subject, and he too cannot see Taro and Hanako. There is an experimenter on the other side of the screen, who is the only one who can see what happens on that side.

Taro and Hanako then perform a certain action. Then, the experimenter on that side whispers to the subject what they did. And the same experimenter asks Grover to guess what they did. Grover, then, says his guess. The subject has been told to give him a cookie if his guess is correct, and a rag if it is incorrect.

After some practice, in the first portion of the test session, the experimenter on the other side of the screen whispers to the subject what Taro and Hanako did by using a simple sentence containing *zibun*, such as (35).

(35) Taroo-ga Hanako-ni zibun-no e-o   miseta.
      Taro-Nom Hanako-Dat self-Gen picture-Acc showed
      "Taro showed Hanako a picture of himself."

Because of its SO, only *Taroo* can be the antecedent of *zibun*, and not *Hanako* or someone else for that matter.

The experimenter then tells Grover that Taro showed a picture to Hanako and asks him to guess whose picture he showed. In this case, if Grover says Taro's picture, he is expected to be given a cookie. If he says someone else's picture, he is expected to be given a rag. We must hasten to add that in the practice session, similar sentences which do not contain *zibun* are given, and in half of the cases it is Taro's picture and in the other half it is Hanako's picture, thereby eliminating the response bias toward either Taro or Hanako.

Twelve three-year-olds, 14 four-year-olds, and 15 five-year-olds were able to understand the procedure, and participated in this portion of the experiment. The result is that all the subjects except one three-year-old responded in an adult-like fashion, thus confirming the early emergence of SO of *zibun*.

The second portion of the experiment employs the same task as the first, but differs in the nature of stimulus sentences. A sample sentence used in this portion is (36).

(36)   Taroo-no otooto-ga   Hanako-ni zibun-no e-o   miseta.
       Taro-Gen brother-Nom Hanako-Dat self-Gen picture-Acc showed
       "Taro's brother showed Hanako a picture of himself."

In response to the experimenter's request to guess whose picture Taro's brother showed to Hanako, Grover is expected to respond "Taro's brother's," not "Taro's."

The same group of subjects participated in this second portion. Again, almost all the subjects responded in an adult-like fashion. Only one three-year-old (the same subject who failed in the first portion) and one four-year-old failed to do so. This result also confirms the early emergence of the c-command requirement of *zibun* discussed above.

The last portion of the experiment is again like the first two, except for the nature of stimulus sentences. This time, stimulus sentences have an embedded sentence that contains *zibun*, like (37).

(37) $Taroo_i$-wa [$Akira_j$-ga $Hanako_k$-ni $zibun_{i/j/*k}$-no e-o   miseta]
       Taro-Top   Akira-Nom Hanako-Dat self-Gen   picture-Acc showed
       to   omotta.
       that thought
       "Taro thought that Akira showed Hanako a picture of himself."

The experimenter asks Grover whose picture Taro thought Akira showed to Hanako. Because of LDB of *zibun*, either Taro's picture or Akira's picture is the adult-like response.

In this case, because of the lengthy nature of stimulus sentences, a smaller number of younger subjects (five three-year-olds, 11 four-year-olds, and 15 five-year-olds) were able to participate. This apparently is due to their limited processing capacity, as they also failed in sentences like (38) which do not contain *zibun*.

(38)   Taroo-wa [Akira-ga   Hanako-ni   Ziroo-no e-o   miseta]
       Taro-Top   Akira-Nom Hanako-Dat Ziro-Gen picture-Acc showed
       to   omotta.
       that thought
       "Taro thought that Akira showed Hanako Jiro's picture."

However, among those who were able to participate, almost all (four three-year-olds, 10 four-year-olds, and 15 five-year-olds) responded in an adult-like fashion, allowing LDB.

These results show that children as young as three are already aware of SO and LDB. The results strongly suggest that these properties of *zibun* are related to properties of UG, thus requiring no experience for them to emerge.

However, these results do not directly answer the more interesting question of whether SO and LDB of *zibun* emerge at the same time or not. While the results do not conflict with the prediction of the simultaneous emergence of the two properties, it is not clear when these properties, particularly LDB, emerge in acquisition. We have to wait for future research to answer this question.

6   Negation

We mentioned at the beginning of this chapter that *nai* is the negative marker and selects the projection of a nonfinite Irrealis verbal form "mizen-kei." It has been long noticed by researchers of the acquisition of Japanese (e.g. Clancy 1985) that young children produced errors in which a finite verbal form is followed by *nai*. For example, consider (39).[5]

(39)   hair-u nai.
       enter   not
       "(It) does not enter."

The correct adult counterpart is (40).

(40)   hair-a nai.

However, this type of error, named "External Negation (EN)" by T. Sano (1995), had not been given systematic treatment before his work.

Since Bloch (1946), Japanese verbs are classified into two groups with respect to verbal morphology by root-final sounds: consonantal and vocalic. (41) represents the paradigm of consonantal verbs, and (42) that of vocalic verbs.

(41)
	enter	*attach*	*fly*
Nonpast	hair-u	tuk-u	tob-u
Past	hait-ta	tui-ta	ton-da
Irrealis+nai	hair-a nai	tuk-a nai	tob-a nai

(42)   *be/exit*   *sleep*   *eat*
    Nonpast   i-ru   ne-ru   tabe-ru
    Past   i-ta   ne-ta   tabe-ta
   Irrealis+nai i-nai   ne-nai   tabe-nai

A glance at the two paradigms reveals that (42) is much simpler than (41).
The Irrealis form of a vocalic verb is identical to its bare root. Furthermore,
negative forms can be formed by simply putting *-nai* to the bare root, and the
bare root can easily be identified by comparing nonpast and past forms.

T. Sano's (1995) important finding is that there is a dramatic difference
between those two types of verbs with respect to the occurrence of the above-
mentioned negation errors. Table 13.1, taken from T. Sano (1995: 88), shows
this.

On the basis of this observation, T. Sano (1995) proposes the following
maturational account.

(43)   Irrealis formation of consonantal verbs matures. At first, children may
       fail in the formation. After a certain point in development, they become
       completely competent in it.

Because of this maturational factor being involved, young children have to
satisfy themselves with (44) instead of the adult structure in (13), reproduced
here for readers' convenience.
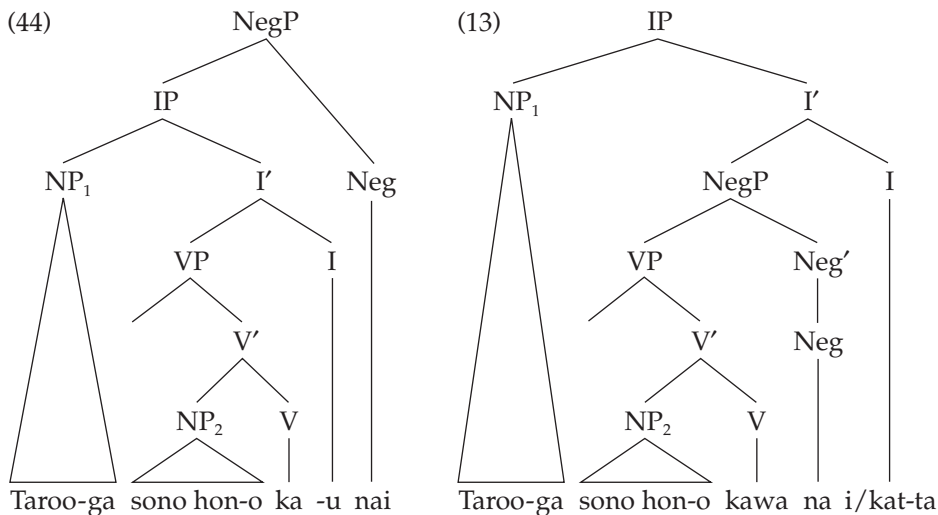
T. Sano (1995) further argues that (43) is a language-specific instantiation
of the more general acquisitional principle which he calls "morphological
maturation," and attempts to relate EN with "Root Infinitives (RI)" in Indo-
European languages (e.g. Wexler 1996).

Table 13.1 Negation errors in consonantal and vocalic verbs reported in
T. Sano (1995: 88)

	Consonantal		Vocalic	
	EN	*Adult-like*	*EN*	*Adult-like*
Toshi (2;3–2;8)[a]	26(72%)	10	0(0%)	25
Ken (2;8–2;10)	30(55%)	25	4(7%)	53
Masanori (2;4)	6(55%)	5	2(6%)	34
Total	62(61%)	40	6(5%)	112

[a] The numbers to the right of the children's names indicate their ages over the period when the experiment was carried out.

(45) Adjunction-affixation matures. It is not completely operative at first and matures at a certain point.

As mentioned in section 1, there have been proposals concerning maturational factors in language acquisition. However, a caution is needed in introducing the notion of maturation in the theory of language acquisition. The point is that we need to constrain the domain of application as narrowly as possible. Otherwise, the theory could say virtually anything in that there is always room for invoking maturation when allegedly innate properties of language do not seem to operate from the beginning. T. Sano (1995) is apparently aware of this, and attempts to constrain the maturational domain to adjunction-affixation. We need more work, however, to decide if his approach is on the right track.

7 Conclusion

We have discussed some of the recent works that have a direct bearing on the "logical problem of language acquisition." Needless to say, there are other works that were not touched upon here due to space limitation. They include M. Takahashi's (1993) work on verbal nouns, work by a number of people on the "overextended" use of *no* in prenominal position (e.g. Murasugi 1991), M. Nakayama's (1996) work on empty categories, and Imai and Gentner's (1997) work on lexical/cognitive development.

The studies reviewed in this chapter along with many other recent studies strongly indicate that UG plays an important role in the acquisition of Japanese grammar, guiding children what to look for and where to go. In fact, many abstract grammatical properties do exist in the early grammars of Japanese-speaking children.

With the progress of the PP approach to UG, it has become much easier to put the study of Japanese acquisition into the perspectives of the construction of a general theory of language acquisition. The same applies to studies of the acquisition of other languages as well. "Comparative studies" of language acquisition, just like comparative syntax, will become increasingly important in this context to pin down the role of experience on top of the role of genetically preprogrammed UG.

As mentioned at the outset, work of this sort has just recently begun, and in fact, in spite of all these efforts, we must admit that we are still very far from getting a coherent picture of the development of Japanese grammar as a whole. Much more work along these lines must be carried out for that purpose. To facilitate these attempts, it is now being planned to incorporate Japanese data into the CHILDES database (MacWhinney 1995, Oshima-Takane and MacWhinney 1995). I would like to conclude this chapter by hoping that in the very near future the present chapter will be outdated because of new findings.

NOTES

1   This does not preclude the possibility of inducing negative evidence using positive evidence and children's internal mechanism. This is commonly called "indirect negative evidence" (N. Chomsky 1981a).

    Some researchers claim that negative evidence is being provided to children on the basis of grammatical "expansion" following children's incorrect utterances. See G. F. Marcus (1993) for discussion.

2   The interpretation of those results may be less clear. Some authors might have taken the results as showing that an instance of interpretive heuristics then known as "perceptual strategy" (e.g. Fodor et al. 1974) overrides children's grammar in comprehending scrambled sentences. The heuristic in question roughly goes: "If the verb is an action verb, interpret the first NP in a sentence as the Agent and the second as the Patient." Under this interpretation of the experimental results, scrambling is acquired early but is overridden by the above heuristic.

3   The experimental innovation introduced in Otsu (1994a) may also be useful in studying other constructions whose use is discourse-controlled, such as direct passives.

4   There is a well-known class of "logophoric exceptions" to the generalizations summarized above. The following examples are taken from Kameyama (1984: 230).

(i) $Taroo_i$ wa $Ziroo_j$ ni [[$zibun_{i/j}$
      Taro   Top/Sub Ziro by   self
      to   sokkuri na] otoko ga
      with alike is   man   Nom
      iru   koto] o   sirasareta.
      exist fact   Acc was informed
      "Taro was informed by Jiro that there is a man who looks just like self."

The outer brackets indicate the clause expressing the content of what Taro was informed of by Jiro, and the inner brackets indicate the relative

clause modifying *otoko* "man." Notice that *Ziroo*, which is not a subject in any sense, can be the antecedent of *zibun* in (i).

This class of exceptions is called "logophoric" since nonsubject antecedents in those cases all share the property of being "individuals who inform or report certain information . . . or whose feelings are described" (Kameyama 1984: 230). See Kuno (1986a) and Sells (1987) for related discussion.

How this "logophoric" *zibun* relates to "anaphoric" *zibun* in acquisition and in adult grammar is an extremely interesting question that awaits future research.

For more details of *zibun*, including different analyses from Katada's (1991), and properties of other anaphoric and pronominal elements in Japanese, see chapter 6 in this volume.

5   Examples in this section are taken from T. Sano (1995) unless otherwise mentioned.