OTHER TOPICS

Kanno's Prediction : Logical Structure in Critical Period of Native Language Acquisition

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1. Introduction

The aim of this paper is to explain logical structure in critical period of native language acquisition and to show Kanno's Prediction.

In Section 2, critical period of native language acquisition is taken to be the shift from Plato's Problem in the sense of Chomsky (1986) to Orwell's Problem in the sense of Kanno (1997), and it is considered from the viewpoint of implications. In Section 3, Kanno's Prediction is shown on the basis of the qualitative change from the two implications of Plato's Problem to the two of Orwell's. Section 4 is devoted to two remaining problems.

2. Logical Structure in Critical Period

Chomsky (1986) and Kanno (1997) discuss Plato's and Orwell's Problems, respectively.

(1) Plato's Problem: poor linguistic data, but rich linguistic knowledge

(2) Orwell's Problem: rich linguistic data, but poor linguistic knowledge

Kanno (1997) changes "rich data" and "poor knowledge" in Chomsky (1986) into "rich linguistic data" and "poor linguistic knowledge" respectively, because Orwell's Problem as well as Plato's Problem is relevant to language acquisition.

What, then, is the critical period of native language acquisition? An answer to this question is as follows, as in Kanno (1997).

(3) Critical Period of Native Language Acquisition: Shift from Plato's Problem to Orwell's Problem

Native language is acquired successfully by everyone in so far as he/she has normal ability to listen and speak, because Plato's Problem assures him/her of his/her rich knowledge of his/her native language. By contrast, non-native language is not acquired successfully by everyone, because Orwell's Problem does not assure him/her of his/her rich knowledge of his/her non-native language, in other words, because his/her knowledge of his/her non-native language is poor in so far as Orwell's Problem is

relevant.

There are four implications between linguistic data and linguistic knowledge.

(4) If poor linguistic data, then rich linguistic knowledge.

(5) If rich linguistic data, then rich linguistic knowledge.

(6) If poor linguistic data, then poor linguistic knowledge.

(7) If rich linguistic data, then poor linguistic knowledge.

Which of these four implications are relevant to Plato's and Orwell's Problems?

Not only (4) but also (5) is relevant to Plato's Problem, whereas (7) as well as (6) is relevant to Orwell's Problem. Although Plato's Problem is characterized by (4) and Orwell's by (7), yet (5) has relevance to Plato's Problem and (6) to Orwell's. And it should be noted here that (7) is not relevant to Plato's Problem and that (4) is not relevant to Orwell's Problem, though logically (1) and (2) imply (7) and (4), respectively. Hence (3) is rewritten, as in (8).

(8) Critical Period of Native Language Acquisition: Shift from (4) and (5) to (6) and (7).

(8) denies the possibility of poor native language knowledge or rich non-native language knowledge.

3. Kanno's Prediction

Here I show Kanno's Prediction in (9), as in Kanno (to appear).

(9) Kanno's Prediction: OR changes into AND after Critical Period of Native Language Acquisition.

Kanno's Prediction has three basic points, which are explained in order.

First, OR and AND in (9) mean what logic or mathematics means by "or" and "and" and OR and AND function in the process from linguistic data to linguistic knowledge.

Second, Plato's Problem whose implications are both (4) and (5) has something to do with OR, because it is OR that makes the most of linguistic data in order for rich linguistic knowledge to be acquired, whether linguistic data are poor or rich.

Third, Orwell's Problem whose implications are both (6) and (7) has something to do with AND, because it is AND that makes the least of linguistic data, whether linguistic data are rich or poor, for poor linguistic knowledge to be acquired.

In the process of acquiring linguistic knowledge from linguistic data, if there are N data, OR can make use of one of the N data and so leads to rich linguistic knowledge while AND must make use of all of the N data and so leads to poor linguistic knowledge.

4. Two Remaining Problems

This section is devoted to two remaining problems, though there might be more and more.

The first remaining problem is what mechanism controls the change from OR to AND after Critical Period of Native Language Acquisition. One of the candidates is De Morgan's Laws, that is to say, (A) the negation of P AND Q is equivalent to not-P OR not-Q and (B) the negation of P OR Q is equivalent to not-P AND not-Q. In De Morgan's Laws, negation requires (A) the change from AND to OR and (B) that from OR to AND. Something like negation, especially like (A) of De Morgan's Laws, has something to do with Kanno's Prediction?

The other one is what is a case where both (5) and (6) are relevant. Unlike (4) and (7), a case where (5) and (6) are relevant does not have any qualitative difference between linguistic data and linguistic knowledge. In this case, where the richer (poorer) linguistic data are, the richer (poorer) linguistic knowledge is, how do OR and AND function in the process from linguistic data to linguistic knowledge? A possibility is that they might be the same effectively. This point also has to await further future minute research.

REFERENCES

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