A Tentative Approach with regard to Acquisition and Attrition in Bilingualism

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1. Introduction

This paper is a first step in exploring the question of whether or not language acquisition is closely related to language attrition[1] in a context of bilingualism.

With the development fMRI (functional Magnetic Resonance Imaging),[2] the fundamental research on what a knowledge of language is, as suggested by Noam Chomsky, in relation to Universal Grammar, seems to contain some kind of radical change regarding a neurolinguistic aspect. However, Chomsky himself has never used the term "neurolinguistic" but instead spoke of his approach as " biolinguistic." Considering a basic viewpoint recently suggested by Chomsky, this paper seeks, as a tentative first step, to locate possible peculiarities of relationship between language acquisition and attrition in bilinguals, which may be estimated by employing a neurolinguistic approach.

2. Language Design Suggested by Chomsky[3]

In a recent paper surveying the development of his theories, Chomsky has described the history of biolinguistic perspective according to cognitive systems. He claims three factors in language design as follows:[4]

> The biolinguistic perspective regards the language faculty as an "organ of the body," along with other cognitive systems. Adopting it, we expect to find three factors that interact to determine (I-) languages attained: genetic endowment (the topic of Universal Grammar), experience, and principles that are language-or even organism-independent. Research has naturally focused on I-languages and UG, the problems of descriptive and explanatory adequacy. The Principles- and-parameters approach opened the possibility for serious investigation of the third

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[1] Mira Goral. 2004. First-language Decline in Healthy Aging. *Journal of Neurolinguistics Vol. 17. No. 1--An International Journal for the Study of Brain Function in Language Behavior and Exprerience.* 31-52. Amsterdam: Elsevier Ltd.

[2] Kuniyoshi Sakai. Sept. 30, 2004. Functional Brain Imaging of Second Language Acquisition. Research Area, Brain-Science and Education. *The 1st International Symposium-Research on Learning & Education Based on Neuroimaging,* Japan and Technology Agency. Tokyo.

[3] Noam Chomsky. 2005. Three Factors in Language Design. *Linguistic Inquiry Vol. 36. No. 1.* 1-22. Cambridge: MIT Press.

[4] *Ibid.* 1.

factor, and the attempt to account for properties of language in terms of general considerations of computational efficiency, eliminating some of the technology postulated as specific to language and providing more principled explanation of linguistic phenomena.

As shown above, Chomsky's theory of Universal Grammar (hereafter UG), that all humans have similar characteristic potentials, as to their mind, has focused on descriptive and explanatory adequacy. It is still doubtful that we can establish what factors will determine I-language in our brain. As for the growth of language in individuals, Chomsky also claims there might be general properties of biological systems, which would enable every individual to acquire language as follows:[5]

Assuming that the faculty of language has the general properties of other biological systems, we should, therefore, be seeking three factors that enter the growth of language in individual:

1. Genetic endowment, apparently nearly uniform for the species, which interprets part of the environment as linguistic experience, a nontrivial task that the infant carries out reflexively, and which determines the general course of the development of the language faculty. Among the genetic elements, some may impose computational limitations that disappear in a regular way through genetically timed maturation...

2. Experience, which leads to variation, within a fairly narrow range, as in the case of other subsystems of the human capacity and the organism generally.

3. Principles not specific to the faculty of language.

The basic concept suggested by Chomsky seems to suggest some important approach to find correlations between L1 and L2 acquisition in the context of bilinguals, but there might be no suggestion about attrition in the context of bilinguals. Based upon the previous studies of language acquisition, it has been discussed many times which parameters can be set in a particular language on the process of language acquisition. Concerning the relations between acquisition and the attrition, it might be doubtful to apply some previous concept in an attempt to find correlations between acquisition and attrition based upon the same principle.

However, many previous historical approaches---ones already modified many times--

might contain some underlying applicability to correlations between acquisition and attrition in the context of bilingualism. Chomsky mentions his historical achievements as follows:[6]

> The main concerns in those years were quite different, as they still are. It may be hard to believe today, but it was commonly assumed 50 years ago that the basic theory of linguistic description was available and that language variation was so free that nothing of much generality was likely to be discovered. As soon as efforts were made to provide fairly explicit accounts of the properties of languages, however, it became obvious how little was known, in any domain. Every specific proposal yields a treasure trove of counterevidence, requiring complex and varied rule–systems even to achieve a very limited approximation to describe adequacy. That was highly stimulating for inquiry into language, but it also left a serious quandary, since the most elementary considerations led to the conclusion that UG must impose narrow constraint on possible outcomes—sometimes called "poverty of stimulus" problems in the study of language, though the term is misleading because this is just a special case of basic issues that arise universally for organic growth.

Considering the basic concept about language faculty shown above, it may be impossible to find some plausible relations of applicability between some parameters in UG and language acquisition in recent viewpoints of neurolinguistics. However, in this research, some tentative possibility within the framework , such as the distribution of PRO, and that of null complementizers etc., will be shown to seek underlying relations between language acquisition and attrition in the context of bilingualism.

3. Language Acquisition and Language Attrition

Generally speaking, the L1 decline in monolingual adults has been discussed many times in the context of healthy aging, which seems to open various perspectives in the disciplines of linguistics, sociolinguistics, neurolinguistics, psycholinguistics, etc. These studies from different fields include lots of different populations; persons with aphasia, dementia, healthy aging, and bilingual and multilingual speakers.

However, the clear distinctions between *language loss* and *language attrition* have to be shown clearly. The term *language loss* seems to be studied in a context of phenomena

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[5] *Ibid.* 6.

[6] *Ibid.* 7.

about language behavior. On the contrary, the term *language attrition* seems to be used only in the study of language loss in a context of bilingualism.[7]

The process of language attrition in healthy aging might suggest the similar or lausible process of language acquisition in a context of bilingualism. Previously, such a concept has been considered to belong to a separate field. However, with the recent development of a neurolinguistic field, some plausible hypothesis might be provable, or proved. It might show that similar mechanisms underly different manifestations of language decline according to their different patterns.

As I mentioned in the introduction, this is a first step toward seeking plausible applicability in contexts of bilingualism. In the following report of my research, three patterns of bilinguals will be adopted; English-Japanese bilinguals, German-English bilinguals, Indonesian-English bilinguals with the concept of parameter setting or declining in their brain. The sentences have to involve some kinds of parameters, such as the distribution of PRO, the distribution of CP, etc. The sentences with PRO might lead to show how to define the alternative distributions discussed many times. One of them is based upon the general concept position of infinitive or gerunds. The other is based upon the initiative concept that PRO remains in VP-internal position and subjects are generated within lexical projections. Furthermore, the distribution of CP might also lead to find some cross-linguistic peculiarities in the context of bilingualism. Concerning the structural minimality of CP, the current debate about the initial state of L2 acquisition seems to be closely related to cross-linguistic phenomena, and may also be closely related to the process of L2 acquisition or attrition in some way. Recent generative approaches to L2 acquisition seem to have focused on the precise description of IL(Inter-Language) grammars, which in turn seem to contain different hypotheses regarding Minimal Trees and Full Transfer/Full Access.[8,9]

Concerning the general concept of acquisition, lots of standard arguments have been manifested. However, the opposite concept of attrition has scarcely been discussed till now and it seems to contain many unsolved problems, in particular in the context of

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[7] Mira Goal. 2004. First-language Decline in Healthy Aging: 32.

[8] Bonnie D. Schwartz. May 15, 2005. What's Left in Early L2 Architecture. *The Japan Second Langue Association, The 5th Annual Conference.* Kansei Gakuin University.

[9] Rakesh M. Bhatt and Barbara Hancin-Bhatt. 2002. Sructural Minimality, CP and the initial state in second language acquisition. *Second Language Research 18.*:348-392. London: Arnold.

bilingualism.

It seems to be essential to manifest what the attrition is from the viewpoint of neurolinguistics. Generally speaking, the attrition can be defined in relation to bilingual subjects without pathological loss of language, which seems to be defined in the L1 attrition. On the general concept of attrition, the L2 attrition seems to be excluded, but it is not possible to define why L2 attrition has been excluded, which might be deeply connected to proficiency levels, as to both languages, in their brain. Furthermore, if attrition can be found in L1, this might lead to find correlations with the period of their acquisition process. If L1 and L2 have been acquired in the same way, the language attrition might be found in the L1 context only. To the contrary, if L2 has been acquired over the critical period, the attrition might not be found in the L1 context. Paradoxically, it seems to be an interesting topic to discuss which side of attrition, L1 or L2, might lead to measurement of the proficiency level for two languages. Furthermore, if the existence of interlanguage can be found, it might be a crucial factor in determining which language is the prior language; L1, or not unconsciously in their brain. From a sociolinguistic viewpoint, the language attrition can be considered as a negative consequence of language contact. K. de Bot claims "Language change, shift and dealth typically take place in bilingual communities across generations, whereas the term 'attrition' is used to refer to individual language loss and consequently takes place within one generation." [10] Furthermore, M. Clyne claims that " attrition can be found as loss of structural loss of the structural aspects of language, i.e. change or reduction in form, whilst 'shift' is a loss of functional aspects, i.e. the gradual replacement of one language by another with respect of language use."[11] The structural loss of the structural aspects shown above might suggest a way to find some corresponding peculiarities on the process of acquisition as well as that of attrition. However, in the case of explaining the adequacy for these hypothesized attempts, some structural processes have to be shown among lots of parameters coming from UG. Concerning the syntactic properties, A. Sorace claims the syntactic property is concerned with attrition effects in a pronominal system focused on Binding Principle B,

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[10]K. de Bot. Aug. 2002. Language attrition: Where are we and where are we going? Paper presented at *the International Conference on 1st Language Attrition.* Amsterdam.

[11]M. Clyne. 2001. Paradigm hopping and other feats from Veldho ven. In L. Klatter-Folmer, and P. van Avermaet eds. *Theories on Maintenance and Loss of Minority Languages. Towards a More Integrated Explanatory Framework.* 141-151. Münster: Waxmann.

where the following theory was adopted.[12]

    (1) Binding principle B. A pronominal is free (not bound) in its governing category. Binding is A-binding, i.e. the c-commanding antecedent of the bound element is an argument (A) position.

    (2a) α is A-bound by β if and only if (iff) α and β are coindexed, β c-commands α, and β is in an A-position.

    (2b) α is A-free iff it is not A-bound.

    (3) The governing category (GC). The GC for a pronoun or an anaphor α is the minimal complete functional complex (CFC) that contains α and a governor of and in which α's binding condition could, in principle, be satisfied.[13]

As overt pronoun differences, in Sentence (1) there seem to be different interpretations: a bound variable interpretation and a disjoint interpretation.

    Sentence (1) Mary$_i$ believes that she$_{i/j}$ is intelligent.

    Sentence (2) Nobody believes that [she$_{i/j}$ intelligent]

Based upon the bound variable interpretation, Sentence (2) can be interpreted as follows: (No x: x is a person) x believes that x is intelligent. On the contrary, in the disjoint interpretation , Sentence (2) can be interpreted: (No x: x is a person) x believes that y is intelligent. Sentence (2) can be interpreted as Nobody believes himself/herself to be intelligent. Actually, the disjoint interpretation shows the person speaker-oriented to be intelligent. In the same way, A. Gurel tried to explain the binding facts in Turkish with two pronominal forms. He claims the following sentences may illustrate binding possibilities of overt and null pronouns in embedded subject positions.[14]

    The study shown above seems to contain some suggestions with attrition effects. Specifically, these might contain attrition effects in binding conditions of overt and null

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[12] A. Sorace. 2000. Differential Effects of Attrition in the L1 Syntax of Near-native L2 Speakers. In C. Howell, S. Fish, & T. Keith-Lucas eds. *Proceedings of the 24th Boston University Conference on Language Development.* 719-725. Somerville: Cascadilla Press.

[13] N. Chomsky and H. Lasnik. 1995. Principles and Parameters Theory. In N.Chomsky ed. *The Minimalist Program* :13-127. Cambridge: MIT Press.

[14] Ayase Gurel. 2004. Selectivity in L2-induced L1 Attrition: A Psycholinguistic Account. *Journal of Neurolinguistics Vol.17. No. 1--An International Journal for the Study of Brain Function in Language Behavior and Exprerience.* 53-78. Amsterdam: Elsevier Ltd.

[15] Bonnie D. Schwartz. May 15, 2005. What's Left in Early L2 Architecture. *The Japan Second Langue Association, The 5th Annual Conference.* Kansei Gakuin University.

pronouns in L1; Turkish under the influence of L2; English, because Turkish has pro-drop, whereas English does not have pro-drop.

The phenomena shown above seem to approximate one aspect of the peculiarities for language attrition as to a particular language.

Assuming the underlying correlations between language acquisition and language attrition, some hypothesized patterns might be considered to examine the process of acquisition and attrition for some language as follows:

Pattern 1: $L1 \supseteq L2$

Pattern 2: $L1 \subseteq L2$

Pattern 3: $L1 \cup L2, L1 \cap L2$

Pattern 4: $L1 \cup L2$

The assumed four patterns might show the possible relations to L2 Interlanguage. It might be clear to find that L2 Interlanguage could exist in Pattern 3. However, if Pattern 1 and Pattern 2 have L2 Interlanguage, the peculiarities of those might be completely different from each other. Furthermore, L2 Interlanguage could not be found in Pattern 4. It is very interesting to note how UG might have an influence on L2 Interlanguage.

Concerning the existence of CP, B. Schwartz claims that cross-linguistic research has shown that early Interlanguage utterances---just like early L1 utterances—typically do not include things like questions with wh-fronting or with subject-auxiliary inversion etc.[15]
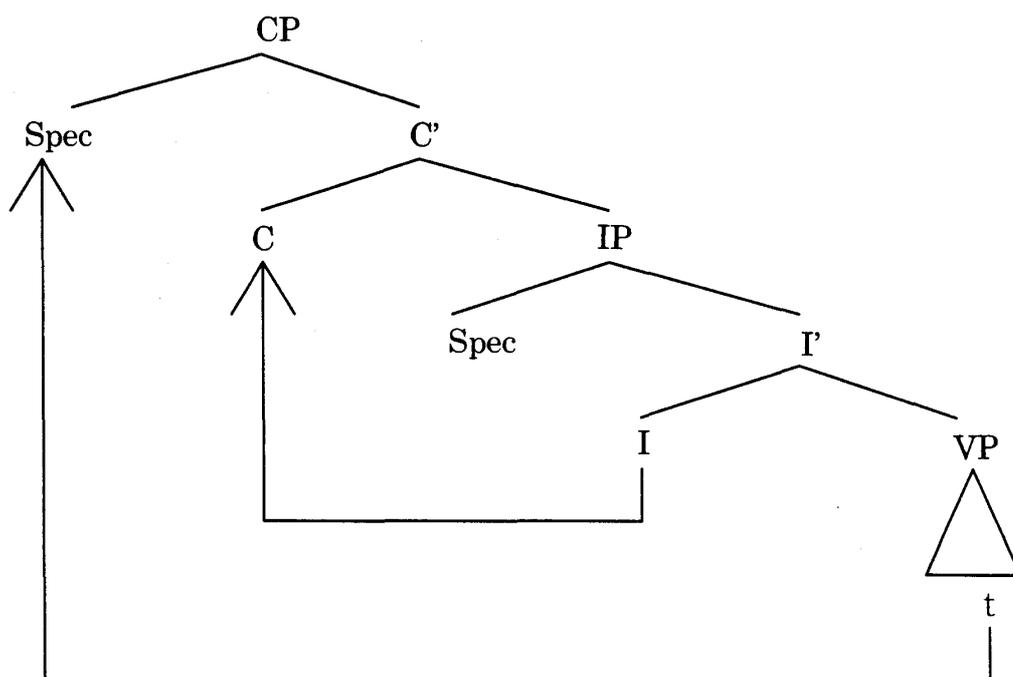
She gives as an example Hindi learners' knowledge of English CP. The learners, of different levels from beginning to advanced, performed two tasks, both of which were sensitive to the existence of CP projection. Participants were 125 Hindi speakers learning English in a public school in New Deli, India, across five grade levels. They performed two tasks to test the availability of CP in their English acquisition. The first task was adverb interpretation based on comprehension, and the second was question formation based on production. Based upon these two tasks, she claims the knowledge of English CP is initially not available, but that this knowledge develops gradually, with increased experience in English. This hypothesis seems to contain a crucial factor whether UG is working in the initial stage of L2 acquisition or not. If UG is clearly working, the absence of CP might not be considered. On the other hand, if UG is not working on every initial stage of L2 acquisition, the absence of CP might be considered.

Concerning the language attrition, several approaches focused on interlanguage process. If the same phenomena between language acquisition and language attrition process could be found, the existence of CP, some hypothesis over cross-linguistic phenomena might be proved.

4. Closing Remarks

As mentioned in the introduction, this paper is a first step in seeking tentative possibilities to find whether language acquisition has close relation to language attrition in the context of bilingualism or not. In various recent approaches to language acquisition and language attrition, some common hypothesis could be found, even though language acquisition seems to be completely different from language attrition.

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