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Beyond a dichotomic approach to language variation*

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1. Introduction

On the assumption of the existence of Universal Grammar (UG) in our minds, a number of differences among human languages that we can detect everyday life should be reducible to or predictable from UG. Within the framework of the Chomskyan theory, variation is expressed by the binary values of linguistic parameters. Given a certain parameter, its value in each language is fixed as positive or negative through language acquisition.

Apparently, the binary approach to language variation seems valid since many linguistic phenomena can be described in two ways: present or absent. The null-subject parameter (Chomsky (1981) and Rizzi (1986)) is a typical example. According to this parameter, languages are classified into the two types: null subject languages like Italian and Spanish, which allow pronominal subjects to be omitted and non null subject languages like English and French, which must have the obligatory pronominal subject in the sentence. It will be shown later, however, that parametric variation is not always binary. Note that the null subject parameter discussed here is a micro/medioparameter in the sense of Baker (2008), by which the comparison is made within the relatively narrow range of the language families like the Germanic and Romance languages. On the other hand, more samples from the wider range of languages are discussed in the field of comparative syntax and typology. This is called macroparameter.

This paper focuses on a number of cases where the types of parametric difference are more than two. Such phenomena cannot be explained by the binary approach to parametric variation. Alternatively, I will claim that a scale theory is more promising to deal with a wide range of language problems.

The organization of this paper is as follows. Section 2 will review some traditional analyses of parameters and then Section 3 will discuss their disadvantages. One important point is that the null-subject parameter and the verb movement parameter are not binary. In Section 4, I will

present an alternative approach to this problem, based on the discussion of the voice system in human language. There are a lot of reasons to assume that language variation should be described hierarchically, rather than dichotomically. The final section is a conclusion.

2. Parametric approaches to language variation

In the principles and parameters approach (Chomsky (1981, 1986)), the theory of UG is based on a finite set of fundamental principles and parameters. Principles are common to all languages, while the values of parameters are fixed by experience. A particular grammar is determined through this process[1]. This means that parameter-setting is strongly associated with first language acquisition. The head directionality parameter is a good example to show it. The initial state of the linear order of heads and complements in a particular language is not determined. Children learn whether their language is head-initial or head-final. Taking the actual speed of language acquisition into account, the number of parameters should be limited and their values should be 'binary.'

2.1 The null subject parameter

Now, consider the null subject parameter. Some languages (Italian and Spanish) allow the subject to be unexpressed in finite clauses while others (English and French) do not. In this point, the null subject parameter is also binary.

(1) a. [ϕ] Ha telefonato Gianni. Italian
b. *[ϕ] has telephoned John. English

In the principles and parameters approach, the position is occupied by an implicit subject called *pro*, which must agree with the verb in number, person, and gender. *Pro* is required by the Extended Projection Principle (EPP), which is informally stated as follows:

(2) *Extended Projection Principle*
A clause must have a subject[2].

Chomsky (1981) and Rizzi (1986) propose that *pro* must satisfy two requirements: one is a licensing condition and the other is an identification condition. They claim, further, that empty categories must be licensed under X^0-government. In this case, the null subject *pro* is governed by the head of IP. Within the framework of the Minimalist program, the notion of rich inflection is replaced by the strength of formal features. According to Chomsky (1995), a strong feature (in a given functional head) must be checked off before Spell-out; otherwise, the derivation will crash because they are uninterpretable at LF and PF. This is why the feature of *pro* is checked/licensed under the spec-head relation with T. As for identification, Rizzi (1982) claims that the meaning of

pro is recovered from a bundle of linguistic features (AGR) that the head I/T carries (e.g. identification).

(3) $[_{IP/TP}$ *pro* $[_{I'/T'}$ I/T $[_{VP}$ $[_{V'}$ V DP]]]]

↑ AGR ┘

The notion of inflectional richness plays an important role in the presence of the null subject because null-subject languages have a rich inflectional system. For instance, a tensed verb is fully inflected for number, person, and gender in Italian and Spanish. In particular, person inflection has six distinct endings and number inflection has two forms (in the present tense). As a result, the reference of the subject is easily recovered from the ending on the verb. On the other hand, English has a poor agreement/inflectional system in that a verb is inflected only for the third person singular. Thus, *pro* cannot be licensed by government and identified through agreement. In this way, the difference between the two types derives from the strength of AGR.

2.2 The V-movement parameter

The verb movement parameter was initially proposed by Emonds (1978) and Pollock (1989). First, Emonds (1978) discusses the differences of the relative order of adverbs and verbs between French and English. The main verb of a sentence must precede an adverb, rather than follow it in French, as in (4).

(4) a. Jean embrasse souvent Marie.
b. *Jean souvent embrasse Marie.

(5) a. *Jean kisses often Mary.
b. Jean often kisses Mary.

On the assumption that the adverb is adjoined to VP, he proposes that V in French moves over Adv into a inflectional head position. This option is unavailable in English, as in (5a)[3].

Pollock (1989) analyzes this phenomenon in more detail. First, he states that all verbs can raise from V to I in French while *have* and *be* raise in English in finite clauses. Second, he discusses the grammaticality of V-raising in non finite clauses. Consider (6) and (7).

(6) Ne pas être heureux/n'être pas heureux.
ne not be happy ne be not happy

(7) Ne pas sembler heureux/*ne sembler pas heureux
ne not seem happy ne seem not happy

The raising of auxiliary verb in infinitival clauses is optional as in (6) while the movement of the main verbs *sembler* is not grammatical as in (7) as long as we assume that Neg is located between I and V. Following from the contrast, he claims that the inflectional projection (IP) should be more articulated than we have thought. This is called the Split-IP Hypothesis[4], where IP, with two

different sets of features ([±T, ±Agr]), is split into Tense Phrase (TP) and Agreement Phrase (AgrP), and NEG is located between TP and AgrP. The V-movement undergoes cyclically due to the Head Movement Constraint (HMC)[5].

(8)　$[_{TP}$ subj $[_{T'}$T $[_{NegP}$ NEG $[_{Agr}\phi$ $[_{Agr'}$ Agr $[_{VP}$ $[_{V'}$ V obj]]]]]]]

In addition, he explains the parametric variation between French and English. The subject theta role can percolate from V to Agr if Agr is transparent. Agr is transparent in French but opaque in English[6]. Then, a lexical verb V cannot assign any theta roles if Agr is opaque. As a result, V cannot move to Agr in English.

Instead, Agr lowers to V in English and then the external theta role of V is transmitted via chain. As for T, Pollock argues that non-finite T is universally opaque; therefore, only Auxiliary verbs can move to T. On the other hand, finite T is transparent; therefore, all French verbs move to the head, but English verbs cannot because the lower head Agr is opaque.

2.3 More economical explanation[7]

It is important to note that the binary values of parameter enabled a more economical and sophisticated explanation of basic word order. It is widely known that there are six logically possible orders: SOV, SVO, VSO, VOS, OSV, and OVS. English is an SVO order language while Japanese is an SOV language. In Greenberg (1963), SOV is the most dominant order, and then SVO is ranked as the second frequent order. Tomlin (1986) also shows, based on 402 languages, that SOV and SVO, much more frequent than the others, account for approximately 85%. In Dryer's (2005: 330) detailed study, the most dominant word order is SOV (497 languages) and the second is SVO (435 languages) among 1,235 languages.

Then, a central concern of typology has been shifted from the statistical research of the six basic word orders to the correlations of VO/OV order. Greenberg (1963) provides some implicational universals associated with the six basic word orders. Consider (9) shown below.

(9)　a. VO languages tend to be prepositional

　　b. VO languages tend to be initial complementizers

Dryer (1992) also claims that the six basic word orders can be boiled down to the dichotomy between VO and OV order (*the Head-Dependent Theory* (HDT)). That is to say, VSO, VOS, and SVO are treated as subtypes of the general type VO, on the grounds that there are a large number of other word order characteristics for which VSO, VOS, and SVO languages pattern very much like one another.

This idea strongly reminds us of *the head-complement parameter* in the principles and parameters theory. It is assumed in Chomsky (1981) and (1986) that there is a head-complement parameter, which determines the order of head and complement within a syntactic category.

(10) *The Head-complement parameter*

a. Head-initial: X precedes its complement

b. Head-final: X follows its complement

By (10), English and Japanese are called head-initial and head-final language, respectively. In this view, UG makes both the order VO and OV available and the relative order of V and O is determined by the parameter. The head-complement parameter can also predict the following differences attested in the two groups.

(11)

	Head-initial	Head-final
a.	V-DP	DP-V
b.	T-VP	VP-T
c.	C-TP	TP-C
d.	P-DP	DP-P

Consider Greenberg's *Universals* again. (9a) states that VSO is likely to be prepositional. Put it differently, as long as V precedes O, P also precedes its complement DP (See (11d)). See (11c), which is consistent with (9b).

2.4 Interim summary

The first two parameters in this section illustrate simple cases of linguistic variation. It is interesting to note, further, that their differences come from the characteristics of inflectional heads in the Minimalist theory. This is so desirable in light of language acquisition because the burden of children is reduced: one trigger for two parameters.

Next, I discussed basic word order. It is shown that the six logically possible orders can be reduced to the two groups as long as we limit the variation to the relation of the head and its complement; *the head-complement parameter*. In this way, the dichotomically parametric approach plays an important role in explaining language variation and language acquisition.

Nevertheless, the situation becomes much complicated if we expand our eyes over a wider range of languages. In the following sections, we will review the null subject parameter and deal with other linguistic phenomena. Then, I will claim that the dichotomic approach to the parameters is not appropriate to capture the typological differences among human language.

3. Revising parameters

3.1 The null subject parameter revisited

A closer look at the null subject parameter reveals that the phenomenon is more complicated than we have thought. Some languages apparently allow expletive subjects to be null, but not

referential ones. Consider German cases below.

(12) a. Gestern wurde *pro* getanzt.
yesterday was danced
b. *Gestern hat *pro* geregnet.
yesterday has rained (Holmberg and Platzack (1995: 108))

The subject in (12a) is a true expletive, which is similar to *'there'* in English, while the subject in (12b) is a kind of quasi-argument. This clearly shows that we have to distinguish arguments from expletives. Rizzi (1986) also argues that Italian and Spanish allow both referential pronouns and expletives to be null, and German permits only non-argument *pro*, but English does not have any kind of null subject. They are under the subset relation: languages only with expletive drop belong to a subset of languages with perfect pro-drop.

(13) a. Italian, Spanish argument and expletive drop
b. German expletive drop
c. English none

(13) suggests that the null-subject parameter is not binary but ternary; otherwise, we cannot predict the occurrence of languages like German, and cannot distinguish Italian and Spanish from German.

The distinctions between full NPs and pronouns have effects on object shift (leftward movement out of VP), which is found in all the Scandinavian languages. In Icelandic, all definite objects can undergo object shift, while only pronominal objects can move in the Mainland Scandinavian (MSc.) languages (Danish, Swedish, and Norwegian). Compare (14) and (15).

(14) a. Jón＋ekkir hana ekki
Jon knows her not
b. Lásu stúdentarnir greinina ekki allir?
read the-students the-article not all (Icelandic)

(15) a. Johan känner henne inte
Johan knows her not
b. *Láste studenterna artikeln inte alla?
read the-students the-article not all (Swedish)

(Holmberg and Platzack (ibid.: 141))

It can be said, therefore, that there are three types of languages with regard to object shift. One is Icelandic, where all DPs can be raised. Another is the MSc. languages, where only pronouns can move. The last case is English, which does not permit the movement of any object. In this way, language variation is not always binary.

3.2 The V-movement parameter revisited

As mentioned in Pollock (1989), there are raising examples even in English. In (16), auxiliary verbs *have* and *be* precede VP modifiers.

(16) a. Thomas *has often* played the violin
b. Thomas *has not* played the violin (He is not a violinist)

Pollock (1989) claims that English Agr cannot transmit a theta-role to its trace position because it is opaque. If the trace does not receive its theta role from the raised verb, it violates the theta criterion. On the other hand, he takes auxiliary verbs (*have*, *be*, and *do*) to be "light" in that they do not have thematic contents. If auxiliary verbs do not have to assign theta-roles, their movement is not illicit. Then, Chomsky (1995) argues that auxiliary verbs, lacking thematic properties, are invisible for LF operations; thus, they cannot move at LF. On the other hand, lexical verbs can move either overtly or covertly, depending on the strength of inflectional suffixes.

There is another problem with V-raising: the tension between finite and infinite clauses. French lexical verbs can be raised in infinitive clauses, and auxiliaries can but need not move to the upper head position.

(17) a. Ne pas sembler heureux est une condition pour...
Not to-seem happy is a prerequisite for...
b. *Ne sembler pas heureux est une condition pour...
To-seem not happy is a prerequisite for...

(18) a. Ne pas être heureux est une condition pour...
Not to-be happy is a prerequisite for...
b. N'être pas heureux est une condition pour...
To-be not happy is a prerequisite for... (Pollock (1989: 373 ff.))

On the other hand, Italian has no contrast between the order of negative adverbs in finite clauses and their order in infinitives. Italian lexical and auxiliary verbs must be raised in infinitival clauses.

(19) a. per non mangiare più/niente/mica
for non to eat no more/nothing/not a thing
b. *per non più/niente/mica mangiare
for non no more/nothing/not a thing to eat (Pollock (ibid.: 412))

We have so far found three types of languages (e.g. English, French, and Italian) about V-raising. Since the value of parameters is limited to binary, such a difference is hard to be described. This is summarized as in Table 1.

Indeed, many syntactic and morphological phenomena can be explained by a simply binary

	Finite		Infinite	
	Lexical	Auxiliary	Lexical	Auxiliary
English	×	○	×	○
French	○	○	×	○
Italian	○	○	○	○

Table 1: Possibilities of V-raising

system. It has been shown, however, that distinctions are sometimes ternary. In addition, parametric differences might be found within a given language. Chomsky (1991) maintains that parametric differences should be limited to the morphological properties of functional heads. If this is the case, variation can be found not only across languages but within a language. In what follows, I will deal with more complicated variation and claim that a hierarchical or scale system is required to explain so-called 'macroparameters.'

4. Language variation and diversity

As mankind diverged from apes, one language GRADUALLY derived from another older language. Language variation is caused by CONTINUOUS change over time. In this section, I will argue that the diversities found in the syntactic realization of experiencer subjects cannot be explained by the dichotomic parameter approach.

4.1 The transitivity across languages

In a transitive sentence, the subject (Agent) is assigned Nominative Case and the object (Theme) is assigned Accusative Case[8]. However, the syntactic realization of the non-active voice vary among languages. In general, verbs of emotion with an experiencer subject appear in a passive form in English. the same form is usually expressed in an active form in Japanese. Furthermore, in Spanish, it is expressed by an intransitive verb with a reflexive clitic *se*. There are at least three patterns to express the experiencer subject.

(20) a. She <u>was surprised</u> that you came.
b. *Kanojo-wa kimi-ga kita-toko-ni <u>odoroita</u>.* (Japanese)
c. *Ella <u>se sorporendio</u> de que llegaras.* (Spanish)

In addition, Hebrew uses verb conjugation in the same environment. In particular, *hitpa'el* is used for this construction.

(21) *le-bbl* (to confuse; infinitive) > *me. vulbal* (to be confused)

In this way, different languages employ different markers for the experiencer subject. How are they explained in the principles and parameters approach? How should we explain four strategies

in a principled way?

4.2 The historical development of a Japanese morpheme *-ru*

Apparently, the strategies shown in (20) and (21) are irrelevant to each other. However, a Japanese bound morpheme *-ru* is a key to address the problem. This single morpheme has many meanings. Originally, the morpheme has a meaning of '*spontaneous*' (something happens without any external force) and then expands its meaning to *passive*, *potential*, and *polite*.

(22) The four usages of an auxiliary morpheme *-ru*
{a. spontaneous, b. passive, c. potential, d. polite}

The most important point here is that *-ru* works as both an intransitive (＝spontaneous) marker and a passive marker. Roughly, the morpheme has an anti-causative effect. It is possible to claim, therefore, that the four usages are semantically equivalent although the thematic role of 'spontaneous' is experiencer and that of 'passive' is theme. In a finer-grained semantic relation, the four usages should be semantically distinguished. However, they are taken to be equivalent in a coarse-grained semantics.

4.3 The degree of transitivity

The complicated usages of *-ru* can be explained by introducing the notion of the degree of transitivity. Wakayama (2009) proposed, based on Dowty's (1991) Thematic Proto-roles and Baker (1997) and Lidz (2001), that the transitivity is determined according to the canonical transitive conditions, as in (23).

(23) Canonical Transitivity Conditions
a. the involvement of two participants
b. a volitional event (by the subject)
c. (the object undergoes) change of state

For example, the *spontaneous* usage does not meet all the conditions, and the *passive* usage satisfies only (23c).

It has been shown that language variation is not always binary; there are at least four syntactic realizations of emotional subjects. Nevertheless, they are not independent from each other. Rather, they are semantically analogous in that they are non-agentive in light of a single criterion (23).

5. A better model for language diversity

The geographical distribution of languages in Haspelmath et al. (2005) illustrates how languages

diverge in various directions. As mentioned many times in this paper, traditional approaches have taken the values of parameters to be binary. However, the notion of a parameter might not be binary. Consider the dependency of the two types of prepositions[9]. One is *a light/dependent preposition*, which is made of monosyllable; the other is called *a heavy/independent preposition*, which consists of more than one syllable. In Romance and Semitic language, some light prepositions are merged with the following determiners or NPs. These are perceived as a single morpho-phonological unit for native speakers.

(24) a. *di*＋*il*＝*del*(of＋the), *a*＋*il*＝*al*(to＋the) Italian
b. *de*＋*el*＝*del*(of＋the), *a*＋*el*＝al (to＋the) Spanish
c. *be*＋*ha*＝*ma*(in＋the), *le*＋*ha*＝*la* (to＋the) Hebrew

Although this phenomenon is limited to monosyllable prepositions, all of them cannot be merged. Spanish *a* is merged with a masculine determiner *el*, while it cannot be prefixed to a feminine determiner *la*. In Hebrew, the merge is more systematic. *Le* (for to), *mi* (from), *be* (in, with, by), and *ke* (like, as) must be prefixed to the following word: they cannot stand alone. In this way, the weight of P varies according to languages. In our data, P in English is the most independent, and P in Spanish and Italian is more dependent and Hebrew P is the most dependent. This case is quite similar to the behavior of full nouns and pronouns, as mentioned in 3.1.

In semantics, the antonyms like {*strong* vs. *weak*} or {*heavy* vs. *light*} are called 'gradual' antonyms, indicating a gradual transition between two poles. On the other hand, 'complementary' antonyms express binary relationships in which there is no middle-ground (non-gradable). The values of parameters discussed in the Chomskyan theory fall under the gradual antonym.

6. Conclusion

The present research based on typology has revealed that the parameter approach of the Chomskyan theory has a number of merits in the theory of UG and language acquisition, but that it is not fine-grained enough to describe wider-range diversities or macroparameters in the sense of Baker (2008). Instead, I claimed that a scale/hierarchical system is more desirable, as long as we keep the idea that language variation should be predictable from UG, making it possible to explain diversities in a single criterion.

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Notes

[1] Chomsky (1981) calls it *core grammar*.

[2] The obligatoriness of the expletive in English is required by the EPP, too. In addition, the arbitrary interpretation of infinitival clauses is a result of the existence of PRO in the Spec of the projection.

[3] It was assumed in Government and Binding Theory that an inflectional affix lowers onto V in English (the affix hopping approach). However, this idea was abandoned in the Minimalist Program.

[4] The study of articulated IP was so popular in the early 1990's although it deviates from the principle of Economy of Representation, which reduces the structure of human grammar to its bare essential. After that, Chomsky (1995) claims that AgrSP and AgrOP are redundant and he posits TP as a single inflectional projection.

[5] See Travis (1984), who states that *an X^0 may only move into the Y^0 which properly governs it*.

[6] The transparency depends upon the inflectional richness.

[7] This section is partly cited from Wakayama (2009).

[8] This does not hold for ergative languages.

[9] Wakayama (2001) argues that the possibility of P-stranding is strongly associated with the weight of P.

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