<REVIEW>

Hong Bae Lee, "A Transformational Outline of Korean,"

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0. Since Noam Chomsky's *Syntactic Structures*[1] was published a decade ago, the theory of transformational grammar has been applied to quite a few languages, mainly by young students of linguistics in writing their theses or dissertations. But there is no easy access to most of these works. Perhaps *The Grammar of English Nominalizations* by Robert B. Lees[2] has been most widely circulated and used as a model for writing grammars in the framework of transformational grammar.*

Hong Bae Lee's grammar which is under review now was also written originally as an M.A. thesis at Brown University in 1966. Since so few transformational grammars are available and especially since this is the first and only Korean grammar of its kind put out as a monograph, this should have been a welcome publication.

However, I regret to say that (neither the author himself nor) I "think that this present article [Lee's grammar] is a readable and scientific paper in every respect" (Preface), and I *do* mean it literally here. Nor has the work proven the applicability of the theory to an analysis of Korean though the author intended to, and must have believed it did (Preface). I do not mean here that the theory of transformational grammar is not applicable to Korean, but rather that Lee's application of the theory leaves the knowledgeable reader disturbed at many points; the reader who is little informed of the theory may be frustrated or have difficulty making sense out of the grammar.

In view of this danger, I am going to discuss some of the "interesting" statements and

*I wish to express my gratitude to Professor Gary D. Prideaux for his constant help and for many valuable suggestions and comments he made while reading the draft.

[1] The Hague, 1957.

[2] Bloomington and the Hague, 1960.

rules of the grammar; some of which will reveal the inconsistency of the author, others gross misapplication of the theory.

1. Lee's grammar consists of five main chapters. In the introductory chapter, Lee discusses a few points of Korean phonemics providing inventories and cluster charts. Phrase structure (PS) rules are presented in Chapter I, a sample lexicon is given in Chapter II, a large number of optional transformations are discussed in Chapter III, and only four (!?) obligatory transformations are presented in Chapter IV.

I do not see why the author presents the phonemic information which is merely a modified version of Samuel Martin's "Korean Phonemics" (2). It is quite legitimate to limit the grammar to a certain level of the linguistic structure (i.e. pharse structure, transformation, etc.) or to any part of a level. The point is there seems to be no plausible reason why the author should provide a bit of phonological information which is not *formally* incorporated with the total grammatical rules. As far as the grammar itself is concerned in Lee's work, the phonemic information provided in the Introduction is not necessary nor sufficient.

Certainly the author realizes the difficulty that the phonological information in the introductory chapter is not sufficient even to handle the limited number of examples presented in the grammar. That is why he uses footnotes to patch up the defects repeatedly as the need arises. For instance, Lee uses footnotes 5, 7, 8, 9, etc. to show the morphophonemic alternations which are essentially of the same nature and can be handled beautifully by a few morphophonemic (MP) rules if properly ordered. On the other hand, Lee misses a rule like isi ⟶ si in envir. XV___(following Lee's notation).

What I am discussing here is not even a theoretical question, but simply a question of common sense or of consistency. He could have better omitted all the phonological rules, or should have provided a few rules, if he wanted to include any, towards the end of the grammar where the phonological rules should be placed in the framework of transformational grammar. I do not see why he should handle some of the rules in the Introduction, others by footnotes, while others are silently bypassed. Neither the inclusions nor the exclusions of the phonological rules have been justified.

An even more serious point is his self-contradictory remarks in connection with phonology. Let me quote a few lines first:

> The Korean examples are presented *phonemically*,....(2)
>
> Since in the *phonemic transcription* of Korean examples I use the *base form* of a morpheme, the transcription itself is *not readable*, unless we understand

the morphophonemic changes illustrated in the following tables (3). (italics mine)

Now what is meant by "the phonemic transcription"? By "base form"? If the phonemic transcription is not readable (to the native speaker), what is? Of course, the phonemic transcription should be readable. That is what the phonemic theory is getting at after all. That is why the theory makes sense to us. If the point is not clear, consider the following examples:

I	II	*Gloss*
nac(낮)	nat	day
nach(낯)	nat	face
nas(낫)	nat	sickle

Does Lee mean the forms in Column I are phonemic or those in Column II are phonemic? His examples clearly show that he constantly uses the first column, which he considers, are "phonemically" represented and are "base forms".

Needless to say, the forms in the first column are base forms, but they are *not* phonemically represented unless what is meant by "phonemics" is interpreted as "systematic phonemics" in the sense Chomsky discusses.[3] On the other hand, the forms in the second column are phonemically represented as they occur finally, but they are not base forms. Of course, I am using the term "phonemic" in the traditional (taxonomic) sense, and I am sure that is what is meant by Lee too. Thus, it is clear that Lee's examples are cited in base forms using morphophonemic notations, but they are *not* phonemically represented at all.

Whether the phonemic level is necessary for the description of a language or not is an independent question. In the traditional taxonomic model, three levels have been recognized: phonemic, morphophonemic, and phonetic. I do not intend to discuss the question here, but I would like to point out that Chomsky and others have repeatedly argued that it is not necessary to set up an independent "phonemic" level in the transformational model of grammar.[4]

2. A transformational grammar includes a set of symbols such as categorial symbols

[3] See *Current Issues in Linguistic Theory* (The Hague, 1964) or an earlier version in *The Structure of Language*, ed. Jerry A. Fodor *et al* (Englewood Cliffs, New Jersey, 1964), pp. 50-118.

[4] See Chomsky, *Curreent Issues* and Chomsky and George A. Miller, "Introduction to the Formal Analysis of Natural Languages," *Handbook of Mathematical Psychology*, Vol. II, ed. R. Duncan Luce *et al* (New York, 1963), pp. 269-321.

like NP, VP, etc., the operator (——→), abbreviators like ( ), { }, and so forth. However, the use of these symbols is not for the sake of brevity only. Of course abbreviations make the statement shorter and neater, but the reasons are more involved. The real motivation in the use of the categorial symbols such as NP, VP, etc. is that ordinary languages are not accurate nor sufficient enough for scientific statements. For example, "NP" is not just a noun phrase, but it has certain properties defined by the rules of the grammar where the particular symbol occurs. Thus, the NP of Grammar A is different from the NP of Grammar B even if A and B are the grammars of the same language. Thus, the functional and grammatical relationships of the symbol to other symbol or symbols are defined within the particular grammar which contains the symbol. In other words, those symbols are elements of the metalanguage.

In Lee's grammar, the author doesn't seem to make the distinction between the ordinary language and the metalanguage, or at least he seems to treat the symbols as just abbreviations and nothing else. This is indicated in such statements as:

> The symbol "Pronom" is the abbreviation of pronominal..."nominal_a" denotes adjectival nominals...(14).

Almost every rule is accompanied by such statements like these as if to define the terms.

If the terms are defined in this manner, we are no better off than those pre-descriptive grammarians who have been accused of defining the word classes in mentalistic terms. Or, to say that "the symbol 'ProNom' is the abbreviation of pronominal" is nothing more or less than to say that another name for the term is "pronominal." It could have been abbreviated by any other symbol (apart from practical reasons). Conversely, he could have named the category any other way he wanted. In short, such statements as quoted above don't define anything, but the grammatical rules do. If the author was aware of the point (though it doesn't seem so by the way he put the statements in the grammar), I owe him an apology. However, I still say that such statements should not constitute the main body of the grammar; they might have been included in the appendix.

In connection with the use of symbols let me point out the use of a few abbreviators which don't agree with general conventions or don't serve the purpose Lee says, "braces '{ }' denote the choice of one out of *several* elements, and brackets '[ ]' denote elements which must match in the input and in the output"(5). (italics mine) Notice the term "several." Unless Lee includes "two" in "several" he is self-contradictory because he

uses braces for the choice of one out of two mutually exclusive elements (see 1.3 for example). Even if "several" did include "two" (which is unlikely for the normal English speaker), Lee's use of the abbreviator should be limited because, in natural languages, theoretically there are ten, hundreds, or millions of elements which are in complementary distribution. If Lee has chosen a wrong word, it could be replaced by "more than one." Probably that is what he meant.

Lee's statement on the use of brackets also contradicts his actual use of the abbreviator. It doesn't matter whether or not the elements which match are "in the input and in the output." As long as there are two or more pairs of brackets, they can be used in either or both side of the arrow.[5] In fact, that is how Lee uses paired brackets in his grammatical rules. See, for example, 1.3 (7).

Concerning the use of symbols, Lee also says, "The cover symbols X, Y, Z and W have been used to designate any occurring sequences, including null" (5). But this convention either is not consistently carried out in his grammar. In the rule 1.5, for example, X is defined again as "abbreviation of (/Adv)/Pred (+IS+Aux) (+ci+Neg)" (8). Why is it necessary to re-define the use of X here? On the same page (8), in the rule 1.6, he uses a dotted line (....) which is not defined at all, but seems to me the same thing as a cover symbol. These are again examples of inconsistency.

Lee postulates the "phrase boundary" (/) "for several reasons" (5). But the reasons are not clear. Lee says:

> A phrase boundary must be syllabic boundary, and open juncture occurs in the position of phrase boundary...(5).

Now what does he mean by "phrase boundary must be a syllabic boundary,"? (i) Does he mean the syllable equals the phrase? (ii) Does he mean that each phrase boundary coincides with the syllable boundary but not vice versa? Probably, Lee's answer will be "no" to (i) and "yes" to (ii); in which case, the statement will be redundant.

Lee further states that "the morphophonemic changes can not be applied across phrase boundaries." (5). However, as mentioned earlier, not a single MP rule is formally incorporated into the grammar, it is not clear how the "phrase boundary" functions in the grammar. Nor is it clear why it should be introduced by the phrase structure rules rather than by

[5] A. Koutsoudas doesn't allow the use of brackets in the phrase structure: see *A Beginner's Manual for Writing Transformational Grammars* (Mimeographed, Indiana University, 1964), p. 15. But this restriction is lifted in the revised edition of the above, *Writing Transformational Grammars: an Introduction* (New York, 1966); see p. 13.

a transformational one. It is also not shown how the unit "syllable" is formally defined in connection with the unit "phrase," or why the syllable is necessary at all in his grammar.

The units (or primes) and levels are neither inherent in the language itself nor conventional in all grammars; they are introduced by the grammarian for the best of his formal description of the language. [6]

It seems to me that "phrase boundary" in Lee's grammar is used in the sense that "word boundary" is in other transformational grammars. The word boundary is extremely important for the operation of phonological rules; especially, for the cyclical rules, which cannot be applied without word boundary markers that provide the successive higher level of constituent structure and the domain of the MP rule that is essentially of local transformation. [7]

It is a general convention established by leading transformational grammarians and handbooks (i.e. Chomsky, Bach, Lees, Koutsoudas) that the plus sign (+) is not used across an abbreviator. In other words, an abbreviator contains a plus sign automatically. But Lee uses it always except when the "phrase boundary" marker is used. It seems that the marker automatically contains a plus sign, but this fact is not stated in Lee's work.

Of course, everybody is entitled to his new convention provided that the convention is formally specified and used consistently. However, Lee uses the plus sign sometimes inside and other times outside an abbreviator. Certainly, there is no reason why Lee should not follow the generally established convention for simplicity and consistency.

3. An even more serious misinterpretation of the theory is indicated by the use of the two types of grammatical rules. Notice Lee's interpretation of the PS rule and the transformational (T) rule in the following statement:

> An explanation of the symbols employed in this grammar is as follows: "——→" is the rewrite sign for phrase structure rule and morphophonemic rules in footnotes, and "···→" is the rewrite sign for transformational rules (5).

To see what is meant by "morphophonemic rules in footnotes" let me quote a couple of examples:

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[6] For discussions on "primes" and "levels" see E. Bach, *An Introduction to Transformational Grammars*, Chapter 4; Chomsky, "Topics in the Theory of Generative Grammar," *Current Trends in Linguistics*, Vol. III, ed. T.A. Sebeok (The Hague, 1966), p. 33: Fred Householder, Jr., "On Linguistic Terms," *Psycholinguistics*, ed. Sol Saporta (New York, 1961), pp. 15-25,

[7] For discussions on cyclic phonological rules, see Chomsky, M. Halle and F. Lukoff, "On Accent and Juncture in English," *For Roman Jakobson*, ed. M. Halle (The Hague, 1965), pp. 65-80; Chomsky and Miller, "Introduction." For some discussion on "local transformation," see Chomsky, *Aspects of the Theory of Syntax* (Cambridge, Mass., 1965), especially pp. 89, 99, and 215.

(5) la——→ əla in envir. XC_____.

(7) ka——→ i in envir. XC_____.

These MP rules are *not* "rewrite" rules. They are transformational rules; (5) is an addition, (7) is a substitution. In other words, *la* doesn't dominate[8] *əla*, nor does *ka* dominate *i* in the above rules. But *əla* and *i* are dominated by the same nodes which dominated, before the application of the these rules, *la* and *ka* respectively. Apparently, Lee doesn't make basic distinction between the PS (rewrite) rule and the T (replace) rule.

Rewrite rules are essentially expansion, and the phrase structure is developed only by rewrite rules.[9] MP rules employ both rewrite and transformational rules. On the other hand, the T rule is a replacing rule. When the rule is operated, the element of the left-hand side of the arrow is replaced by the one on the righthand side. The difference is illustrated by the following rules and phrase markers (P-markers).[10]

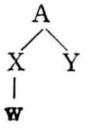
PSi A——→ X+Y

PSii X——→ w

Ti X——→ w[11]

By PSi, A is rewritten as X and Y. By PSii, X is again rewritten as w. Here, both X and Y are said to be dominated by A; w is dominated immediately by X, then by A. This is shown by the P-marker (1). On the other hand, by Ti, X is replaced by w. Notice that w is dominated by X in (1) and by A in (2).

(1)



(2)

Now, suppose we have another T rule like:

Tii w——→ null

which will be operated on the P-marker (1). Then, the derived P-marker will be (3):

(3)

As shown by the P-marker (3), Tii deletes not only the node w but also the node X which dominates w. If there is a T rule X——→ null, not only the node X is deleted, but

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[8] For discussions on the term "dominate" see Bach, p. 72.

[9] Transformational rules are used for some parts of "base component" in the revised model: for some discussions, see Chomsky, *Aspects*, especially Chapters 2 and 3.

[10] For discussions on P-marker, see references cited in footnote 4.

[11] Some use a double arrow (⇨) for T rules.

also whatever is dominated by X and whatever dominates X if X is the only node dominated.

The difference between the two types of rules can be summed up as follows. The PS rule operates on terminal elements (at that point in a derivation) no matter to what node the particular element which is to be rewritten is traceable (i.e. in what structure it may appear) as far as the element (if it is not the initial symbol) has appeared on the right-hand side of the arrow. The "finite state Markovian processes" employ rules entirely of this nature. [12] On the other hand, the grammatical transformation has an entire domain of P-markers which provide structural description (SD). In other words, the grammatical transformation operates not on a terminal string but on any terminal string whose structure is analyzable in terms of the SD represented by the P-marker. [13]

Lee's grammar is written without any distinction between these two types of rules which represent two different levels, namely PS and T levels. Further, I honestly doubt if the basic notion "to generate" or the distinction between the surface structure and the deep structure is clear to the author.

4. Let us now examine some of his grammatical rules to see what I mean. Lee's initial PS rule is formulated as follows:

1.1

$$S \longrightarrow (/NP+SM)\ (/Adv)/Pred(+isi)\ (+IS+Aux)\ (+ci+Neg)\left\{\begin{array}{l}(+T)+\left\{\begin{array}{l}ta\\nya\\kuna\end{array}\right\}\\ la^{(5)}\\ ca\end{array}\right\}/$$

It is incredible how one who has some training in the transformational theory should write an initilal rule like this. There are only two obligatory elements in the string, namely, *Pred* and one of the sentence endings such as *la, ta,* etc. What the author is telling us is that a Korean sentence may have only a predicate phrase (subject noun phrase is not an obligatory part in any sentence). Of course, there is nothing wrong in this statement so far as we are interested in collecting such data. However, it doesn't tell us much about the grammatical rules. It does't tell us the difference between the deep structure and the surface structure (or transformed structure). Consequently, this kind of analysis doesn't provide sufficient syntactic information necessary for correct semantic interpretation of the utterance.

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[12] See Chomsky, *Syntactic Structures,* p. 20.

[13] For a formal definition of "grammatical transformation," see Chomsky and Miller, pp. 301-302.

Lee's grammar will generate such a string as # Pred + ta #. Now there is no way to provide unique or correct semantic interpretation for the string precisely because there is no way to tell us what the subject noun phrase is. However, the speaker-hearer knows exactly what the noun phrase is when he uses such a sentence. In other words, Lee's grammar fails to generate sentences or to explain the native speaker's knowledge about his language, the description of which is the ultimate goal of a transformational grammar.

If the subject noun phrase is introduced obligatorily by the PS rule, it will be clear in each case what the subject noun is. The optional deletion of the subject noun phrase does not affect the semantic interpretation at all because it is the deep structure generated by the PS rules that provides all and necessary information for correct semantic interpretation. That is, the transformation which optionally deletes the subject noun phrase has nothing to do with the semantic interpretation of the utterance. This is why the transformational level is required along with the phrase structure level. This is why the transformational grammar is more powerful than the structural grammar. Lee's grammar misses an essential point right in the initial rule.

As has been discussed, there is no distinction between the deep structure and the surface structure in Lee's grammar. This fact is more clearly indicated in the second rule which I quote in the following:

1.2 $$SM \longrightarrow \left\{ \begin{matrix} ka^{(7)} \\ esə \\ kqesə \end{matrix} \right\}$$

According to this rule, *esə* is an SM (subject marker) which occurs in such a sentence as (i) (Lee's example):

(i) ki haksæŋ iy pyən esə kyəŋki lil iki əsq ta
"the student of side game won"

This sentence is glossed by Lee as "The student's side won the game." Now I wonder how Lee will handle a sentence like (ii):

(ii) ki haksæŋ iy pyən esə sənsu ka kyəŋki lil iki əsq ta
"the student of side in player game won"

The sentence (ii) can be glossed as "In the studennt's side the player won the game." The sentences (i) and (ii) are exactly the same except (ii) contains a noun phrase marked by *ka* (*sənsu ka* "player") while (i) does not. According to Lee both *ka* and *esə* are subject markers (see rule 1.2) which occur in the sentence (ii). Now the questions are: (1) are these elements really subject markers? (2) If so, how a sentence like (ii) can be generated

by Lee's grammar ? Certainly, the element *esə* is not an SM; it is a location marker (English "in", "at"). And Lee's grammar cannot generate a sentence like (ii) due to the fact that Lee's grammar cannot specify the grammatical relation between the surface structure and the deep structure, which is observed between our example sentences (i) and (ii). Clearly, a string like (i) is derived from a string like (ii) by the application of an optional transformation which deletes the subject noun phrase. In other words, the deep structure contains the subject noun phrase (*sənsu ka* in our example sentence) which is deleted in the surface structure. Lee's grammar misses this important point right in the first two PS rules.

In Lee's initial PS rule, the given symbol S is rewritten as nearly a dozen non-terminal and terminal symbols. In fact, if all the optional elements are chosen, the maximum number of symbols will amount to eleven. I am not arguing there is any upper or lower limit in the number of symbols to be rewritten. I am arguing that there must be some plausible reasons in introducing categorial symbols and terminal grammatical morphemes (or formatives). That is, the symbols introduced in the rules should be able to define their mutual syntactic and functional relationship. For instance, if we introduce NP and VP or something of the sort in the initial rule, we are able to define their functional relationship as subject (NP) and predicate (VP). This functional relationship is vital to the semantic interpretation. [14] On the other hand, such categorial symbols as NP, VP, etc. show certain relationship on the level of grammatical transformation. That is, these symbols, which are nodes in P-markers, define the domain of grammatical transformations. Needless to say, it is extremely difficult, if not impossible, to define functional relationships among the symbols Lee introduces in his grammatical rules.

It is not always easy to decide which grammatical (terminal) morphemes should be introduced by the PS rule and which by transformation. However, the decision should not be *ad hoc* (except for some rare cases); our metacriteria, simplicity and grammatical relationship, should dictate us for a decision. Lee's grammar, however, does not reflect any such consideration. For example, Lee's initial rule contains such terminal strings as *ci* and *isi*. Later, Lee mentions that "The optional morpheme 'isi' is an honorific infix for the subject noun phrase." "The morpheme 'ci' is a special inflectional suffix of predicate or auxiliary

[14] For further discussion, see Chomsky's *Aspects*, especially, Chapter 2. However, Charles J. Fillmore raises a question as to the validity of the functional notion (subject, object, etc.) and as to the adequacy in distinguishing between relational concepts and categorial concepts. See Fillmore, "A Proposal Concerning Englich Prepositions," *Monograph Series on Languages and Linguistics*, No. 19, ed. F. P. Dinneen (Washington, D.C., 1966), pp. 19-33.

predicate characteristic of their negations..."(7). However, it is incorrect to observe the morpheme 'isi' as "optional" because the choice of this element is dependent upon the choice of the subject noun. In other words, there is an agreement (concord) between the subject noun and the honorific morpheme 'isi' which is suffixed to the predicate verb or adjective.[15] Accordingly, this grammatical relationship, agreement, should be handled by an obligatory grammatical T rule rather than the PS rule.

I do not know how 'ci' can be defined as "a special inflectional suffix." But 'ci' is not a lexical morpheme (Lee seems to agree with me on this). Its only function is to connect the negative morpheme with the main predicative verb or adjective, which is similar to the stem-formative of Greek. Then it is clear that 'ci' can best be introduced by a transformation rather than by a rewrite rule.

Immediately following the initial PS rule Lee states as follows:

> This rule will generate all and only grammatically simple...sentences and all complex...sentences of the language can be derived from it by means of relatively simple transformations. (6)

Frankly, I am appalled by this statement. If the initial PS rule "will generate all and only grammatically simple sentences," why does he bother to write the rest of the PS rules? If he means all the grammatical rules are developed from the initial symbol S, which makes a better sense, then the whole statement is vacuous. Certainly, it is not the initial PS rule, but all the grammatical rules including the initial one that generate sentences. Or, Lee might have mis-stated the fact that the PS rules will generate all "kernel" sentences from which other sentences are derived. If so, Lee's statement would be a little out of date.[16]

What does Lee mean by "generate all and only grammatically simple sentences."? Does he mean that his grammar can do this powerful job? "A grammar is a set of rules which generates all and only grammatical sentences." But this is a definition. That is, we ideally hope to write such a powerful grammar; but nobody has ever written such a grammar of any language yet. Nor do I believe any linguist will do such a job in any foreseeable future. Certainly, Lee's grammar doesn't generate all and only grammatical sentences unless he describes an extremely peculiar idiolect of Korean which is still unknown to me. Lee's

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[15] This observation is due to Gary D. Prideaus, "The Syntax of Japanese Honorifics," doctoral dissertation, unpublished. The University of Texas, 1966.

[16] For a revision of the theory, see Chomsky, *Aspects;* a concise summary of *Aspects* is found in Francis P. Dinneen, *An Introduction to General Linguistics* (New York, 1967), pp. 379-397.

statement is simply too far from the truth.

The distinction between context free (CF) rules and context sensitive (CS) rules has been considered necessary for describing certain co-occurrence relations in natural languages. Now let us see how this distinction is maintained in Lee's grammar. In connection with the honorific morpheme, Lee states as follows:

> The optional morpheme 'isi' is an honorific infix...Since not all NP's may occur with this honorific morpheme a context sensitive rule is necessary (see 1.4). (7)

Now let me quote 1.4 to see what is meant by CS rule according to Lee (8):

1.4 $$NP+ka/(Adv)/Pred+isi \longrightarrow \begin{Bmatrix} N_{human} \\ ProNom \end{Bmatrix} +ka/(Adv)/Pred+isi$$

If the above rule is a CS rule, we can reformulate the rule following the popular notational convention as:

$$NP \longrightarrow \begin{Bmatrix} N_{human} \\ ProNom \end{Bmatrix} / \_\_\_\_ ka\ (Adv)\ Pred+isi$$

(Here I am using the slant line as "in the environment of" and Lee's use of it is omitted here to avoid possible confusion.) The convention I use here, of course, is much simpler and clearer than Lee's because we don't have to repeat the same symbol for nothing, and we know precisely what symbol is to be rewritten (there is only one symbol, namely the NP on the left). I do not know what Lee gains by not adopting such a convention. However, what is really disturbing is not the notational convention. Compare Lee's 1.4 quoted above and the following rule (9):

1.8 $$Aux \longrightarrow \begin{Bmatrix} Aux_v \text{ in envir. } VP... \_\_\_\_ \\ Aux_a \text{ in envir. } Adj... \_\_\_\_ \\ Aux_c \text{ in envir. } V_c \ ... \_\_\_\_ \end{Bmatrix}$$

The question is: What is the difference of rule schema between 1.4 and 1.8? Are they both CS rules? If so, why Lee has to use the different notational conventions? Again, sheer inconsistency? Or, he might be using different types of CS rules about which I am not informed. If he is using a different convention, he should explain it if not mention the advantages, if any, over the other better known conventions.

Lee says 1.4 is a CS rule. This rule schema is not different from 1.3. Then, 1.3 is a CS rule. Now let us examine the rule 1.3 (7):

The rule says that NP is rewritten as "D+N_1," "ProNom (iy) N_1," or "N_{hum} (iy) N_1" in the environment of *esə* and as "ProNom" or "N_{hum}" in the environment of *kqesə*. In other words, in this rule, the relevant environments for NP are *esə* and *kqesə*. The next rule (1.4)

1.3 $$NP+\begin{bmatrix}-esə-\\-kqesə-\end{bmatrix}\longrightarrow\begin{bmatrix}-\left\{\begin{matrix}D\\\left\{\begin{matrix}ProNom\\N_{hum}\end{matrix}\right\}+(iy)\end{matrix}\right\}+N_1-\\-\left\{\begin{matrix}ProNom\\N_{hum}\end{matrix}\right\}-\end{bmatrix}+\begin{bmatrix}-esə-\\-kqesə-\end{bmatrix}$$

says that the relevant environment for NP is "ka (Adv) Pred+isi". And the rule 1.5 specifies some other environments. In short, NP is rewritten again and again in different environments, but the relevant environments specified by the rules are *not exhaustive*. We don't know how to rewrite NP in other environments which are not specified by the rules.

On the other hand, if we interpret rules like 1.3, 1.4, and 1.5 as CF rules, we face even more serious difficulty. In such a case, we are violating one of the constraints imposed upon the PS rule. That is, what is rewritten is not a single symbol but a string of symbols. Therefore, we don't know how to trace back the successive higher nodes for each symbol rewritten. [17]

In short, Lee's PS rules are simply impossible to read due to the author's unclear distinction between CS and CF rules and rule schema together with inconsistent use of other symbols such as cover symbols and dotted lines, etc. There is no system at all in his language used to describe the language.

It is not possible to discuss all the PS rules in detail, nor is there any need. I would like to discuss another point however, in connection with PS rules, concerning the ordering of rules.

To begin with in the second paragraph of Chapter I, Lee states that "The rules described below must be applied in the order indicated"(6). As mentioned already, NP is rewritten by 1.3, 1.4, and 1.5. In 1.7, "Adjunct" is rewritten as "NP+PostP." Now what is this NP? Is it a recursive NP? or, is it an NP which is different from the previous NP? If this NP is recursive, we should be able to know to what earlier rule we must go back to develop the NP. But we don't know. That is, there is no rule which rewrites the NP in 1.7 in that particular environment. If the NP in 1.7 is different from the one introduced by the initial rule, then Lee should have used a different symbol. Probably, Lee means that the NP which appears in the rule 1.7 and following (1.9, 1.10, 1.13, 1.18) is rewritten by the rule 1.19 in that particular environments. But what happens to the NP in other environments ? I think there is no point in arguing any further. In short, the order is im-

[17] For restrictions on the ?3 rule, see Bach, pp. 35-36.

possible to follow.

This difficulty is due to Lee's placing of the rule which rewrites NP too early and to his improper use of CS rules. One solution to this difficulty is to place the rule rewriting NP after all NP's (subject, object, etc.) appeared in the earlier rules, then use the CS rule to develop NP.

5. As pointed out already, the notion "transformation" is not clearly interpreted in Lee's work. Consequently, very few rules in Chapter III are readable or make sense. I feel it is not necessary to discuss any particular transformations in Korean, but I will refer to the first one or two rules to elaborate what I mean. Lee's first optional T rule is formulated as follows (28):

3.1 Denominal Adjectivalization

$$\begin{matrix} X+V_{intr}+Y \\ X'+N_{adj}+Y' \end{matrix} \cdots\rightarrow X+N_{adj}+ha+Y$$

This rule contains some restrictions which are not relevant to our discussion. To this rule, Lee provides an example as follows:

ki i ka ca ta.
X +V_{intr}+Y

ki i ka kyəlpæk il cohaha ta.
X' + N_{adj} + Y'

$\cdots\rightarrow$ ki i ka kyəlpæk ha ta.
X + N_{adj} + ha +Y

Matrix: He sleeps.

Constituent: He likes innocence. $\cdots\rightarrow$ He is innocent.

I do not see any motivation at all for this transformation. It is incredible why a generalized transformation is needed for this rule. Is there any reason based on intuitive feeling? Is there any reason based on economy? What does it explain? Nothing, as far as I can see. Why is not a singulary transformation used if a transformation is needed at all. The string #X+ N_{adj}+ ha+Y # can be derived simply from such a string as # X +N_{adj} +Y# by an obligatory transformation. In fact, the singulary transformation will do a better job and may coincide with the native intuition.

Apart from the transformation itself, let us consider the problem concerning notational conventions. Lee's formulation of 3.1 does not tell us to what node the added element, *ha*, belongs. That is, does *ha* belong to the same node as Y belongs or N_{adj} belongs? There is no way to tell to what construction the constituent *ha* belongs. To avoid this difficulty, we have several conventions adopted long before Lee wrote the grammar. Using a conven-

tion similar to what is used in Bach, let me reformulate 3.1 in the following:

SD: $\underset{1}{X},\ \underset{2}{V_{intr}},\ \underset{3}{Y}$

$\underset{4}{X},\ \underset{5}{N_{adj}},\ \underset{6}{Y}$

SC (Structural Change):

$1,2,3,4,5,6 \longrightarrow$ (i) 1, 5+ha, 3 or

(ii) 1, 5, ha+3

By another convention, the elements which are not chosen are automatically deleted. This formulation has several advantages over Lee's. First of all, we use comma instead of plus so that we don't have to worry about whether or not the elements in the SD are directly dominated by the same node. Furthermore, if plus is used for direct concatenation in SD's, it will be impossible to specify the domain of transformations by SD's in many cases. Second, referring to a point raised earlier, now we know whether *ha* is a constituent of N_{adj} or that of Y. That is, if the former is the case, (i) will be adopted; if the latter is the case, (ii) will be adopted in the SC above. In other words, the IC relationship is expressed by plus.

For a few more points, let me quote Lee's second optional T rule(29):

3.2 Progressive

$$X + \begin{bmatrix} VP \\ (PreAdj) + Adj_1 + ə + ci \end{bmatrix} + Y(T) + ta/\cdots\longrightarrow$$

$$X + \begin{bmatrix} VP \\ (PreAdj) + Adj_1 + ə + ci \end{bmatrix} + Y + nin_1{}^{(21)} + ta/$$

Is the element nin_1 (or n) the progressive morpheme? If #ka-n-ta# (간다) is progressive, what is #ka-ko itta# (가고 있다)?

In the Introduction he sasy, "The language I handled in this paper is primarily the colloquial Korean." According to the rule 3.2, a string like #ka-n-ta# will be derived from a string like #ka-ta#. The question is, then: Is #ka-ta# a colloquial form? Definitely, no. Lee says, "...it-[nin_1] occurs only before the declarative sentence 'ta.'"(29) Is "ta" a sentence? No. If we take "sentence 'ta'" to mean "sentence with the ending 'ta'" the meaning is clearer. However, the statement is not true. What about sentences with the ending *ka* as in #ha-nin-ka#, or with the ending *kuna* as in #ha-nin-kuna#? The element *nin* whatever it may be is the same element as cited by Lee in the above statement. Clearly, Lee's observation is not correct.

Lee's treatment of the element "T" in the above rule is not clear. Lee says, "the optional 'T' of the input string is obligatorily deleted"(29). Then, why T is included in the SD (input) in the first place? Provided that Lee's formulation of this transformation makes some sense, why doesn't he derive the string which contains *nin*$_1$ from the string which doesn't contain the element T whatever it may be. On the other hand, Lee says, "From now on 'T' will include 'nin$_1$'" in his footnote 21(29). What he really says in this footnote is that the element *nin*$_1$ is dominated by the element T. If so, T is not optional but obligatory. If this interpretation of Lee's rule is correct (though I am puzzled), the transformation 3.2 is meaningless because the element *nin*$_1$ can be better introduded by the PS 1.33 along with other tense markers (see the rule 1.33 on p. 17). Either the element "T" is optional as indicated by the parentheses or it is obligatory as indicated by the footnote 21, the rule 3.2 doesn't make sense. Also notice the element "PreAdj." This element is also optional and not affected by the SC (output), so why does Lee bother to include it in the SD? It may not be present in the SD. The variable X is used to cover this fact; that is, X may or may not contain PreAdj along with whatever else there may be.

6. I think it is pointless to discuss any other rules, but I would like to touch on just one more, the first rule in Chapter IV—mainly because I don't like to leave the chapter untouched. The first obligatory T rule is formulated as follows(55):

4.1 "eke" and "eke$_1$"

$$X+\begin{bmatrix} NP+e \\ N_2+e_1 \end{bmatrix}+Y\cdots\rightarrow X+\begin{bmatrix} \{N_{an} \\ ProNom\} \\ N_{an}+eke_1 \end{bmatrix}+eke\ \Big]+Y$$

The formulation of the above rule reflects that even the very basic notions "SD" and "SC" are not clearly expressed in the grammar. The symbols NP and N_2 on the left-hand side (SD) of the arrow have already been rewritten as N_{an}, ProNom, etc. by PS rules. They cannot be rewritten as N_{an}, ProNom, etc. by any T rule. Transformations don't do such a job. (See Section 3 of this paper.) What is ungrammatical up to the point where this obligatory T rule is to be applied is the strings which contain $N_{an}+e$. Therefore, the input (SD) should contain only those ungrammatical strings upon which proper SC is operated as shown in the following:

SD: X, N_{an}, *e*, Y
1 2 3 4

SC: 3⟶*eke* or 3 ⟶ 3+*ke*

This rule says that the element *e* is transformed into *eke* or *ke* is added to *e* (there is no

point in trying to decide which is better in this discussion) following an animate noun (N_{an}). Even if we accept Lee's formulation of the T rule, it will generate many ungrammatical strings that contain N_{loc}+*eke*, N_{loc}+Nd+*eke*, etc. because N_2 is rewritten as N_{loc} (Nd) or N_{an} (Nd) by the PS rule 1.27 (16).

In general, Lee's rules are very powerful, so powerful that they are not adequate for the description of the language. In other words, his rules take any symbol or symbols for input and rewrite as any other symbol or string of symbols. This kind of rule is known as an "unrestricted rewriting rule." It has been shown why this kind of rule is inappropriate for the description of natural languages.[18]

7. The last but not least important point I would like to include in this discussion is the distinction between the rule of grammar and that of usage. Of course, it is not always easy to make such a distinction, but it should be made when it can be.

Concerning the speech level, Lee says if the lowest speech level is "used the spoken to must be younger or socially lower than the speaker"(8). Although it is not clear whether Lee is talking about the usage or the grammar, such a statement as above abscures the distinction between the grammar and the usage. Sometimes, we find people in hot quarrel using the lowest level form to each other regardless of their relative age and social relationship. You may use the lowest level form in addressing to the President of Korea or to the Prime Minister of Japan. As a consequence, you may end up in a prison cell (I don't know the law). Even if you did so, you haven't violated any grammatical rules though you may have violated the rules of usage or the rules of law. On the contrary, you have observed the grammatical rules so well that the communication has been put through without any misunderstanding, which might have put you in some difficulty for reasons not grammatical at all in the proper sense of the term.

In short, the selection of speech level does not belong to the grammar proper, but rather to the usage. What is grammatical is the agreement which exists between the subject noun and the predicate in the use of the honorific suffix. The prime interest to the grammarian is the rule of grammar rather than that of usage, though the latter is equally important, of course, for people in other fields like language teaching and for cultural anthropologists.

In conclusion, I should say that Lee's grammar is not a "transformational" grammar in any sense of the term. Forgive me for saying so much in transmitting such a simple message.

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[18] For discussions on four types of rewriting rules, see Chomsky, "Formal Properties of Grammars," *Handbook of Mathematical Psychology*, II, pp. 323-418.

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