# An Explanation of the Similarity between Lexically-Derived and Transformationally-Derived Tough Constructions

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## INTRODUCTION

The present study is to be concerned with the lexical and syntactic analysis of Tough constructions like ( 1 ).

( 1 )  John is tough to please.

The main theme in this study is to present a classification of Tough construction and to motivate the similarity between lexically-derived and transformationally-derived constructions, which cannot be captured under the framework of the conventional generative grammar.

In the course of discussion, we will abandon the position that language acquisition is assumed to be instantaneous as an idealization. It is the position that the conventional generative grammar has been based on. Instead we will follow the proposal for a model of grammar which was outlined by Masaru Kajita in the paper, "Towards a Dynamic Model of Syntax."[1] The model seems to be still not fully developed, but it has some possibilities of studying unsolved parts which conventional grammatical theories have left.

Section I will be devoted to the distinction between transformationally-derived and lexically-derived Tough constructions. We suggest that

Tough construction should consist of two types.

Section II will focus upon some theoretical problems concerning our framework in this study. We shall discuss a motivation of the similarity between lexically-derived and transformationally-derived constructions, which results in an accidental phenomenon within the framework of the conventional generative grammar. In order to give a motivation to the similarity, we will adopt a model which is established on the theory of language acquisition reflecting longitudinal developments.

Section III will be an attempt to explain the similarity between the two types of Tough construction under the new framework. In doing so, we will take advantage of Lawrence Solan's report of his experiments.

Although the aim of this study is an analysis of Tough construction, an important implication is involved. We will try to place this study of Tough construction in the hierarchy of grammatical rules which is known as the name of " markedness." In the latest theory of generative grammar, the dichotomy between " core " and " peripheral " grammars has often been discussed. But in fact little can be said about a whole system of " markedness " at the present time. We cannot show an inclusive perspective of the hierarchy of grammatical rules. But this study will give us a clue to prove the existence of the hierarchy and an illustration of " markedness."

## SECTION I

Tough construction has been studied since the beginning of Transformational Generative grammar. As Chomsky took it up in the paper, " Current Issues in Linguistic Theory,"[2] the construction was useful for the justification of ' transformations ' and ' deep structures ' which were

novel concepts hard to understand for many linguists.    The comparison
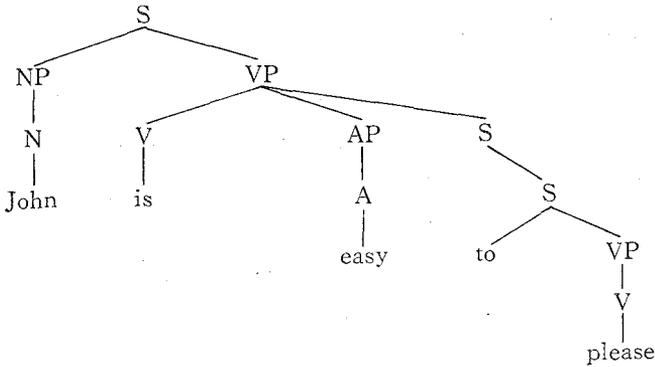between ( 1 ) and ( 2 ) leads to the justification.

( 1 )   John is eager to please.

( 2 )   John is easy to please.

Both of them have the same sequence of morphemes—Subject＋be＋Ad-
jective＋To-infinitive.    But native speakers interpret them  differently.
The former is interpreted as " John pleases someone eagerly," while the
latter as " Someone easily pleases John." Making use of technical terms,
we can explain as follows.   The sentences ( 1 ) and ( 2 ) have the same
structure at the surface level.    They are, however, different at the level
of the deep structure.    It is the transformation that makes the deep and
the surface structures related.    The subject *John* is the object of the
To-infinitive at the level of the deep structure.    Thus, Tough construc-
tion has often used for the introduction of generative grammar.    And
the construction has become a subject of linguists' attention.

Since the former half of the 1960s, various studies have thrown light
upon the complicated syntactic and semantic properties of Tough con-
struction.    The more we have studied it, the more we have seen that
it cannot be explained easily.   So far we have had three  generative
rules for this construction—Tough Movement,[3] Object Deletion,[4] and
WH-Movement.[5] No rule seems to be superior to the others.

A common property of these three generative rules is the application
of transformation.    Putting it differently, the sentence ( 2 ) is transfor-
mationally derived by a syntactic rule.    Afterwards we will refer to it
as ' Transformational Analysis.' The tree diagram (Figure 1) shows the
internal structure of the construction of this kind.

Figure 1

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                        S
              ┌─────────┴──────────┐
             NP                    VP
              │          ┌─────────┼──────────────┐
              N          V         AP             S
              │          │         │        ┌─────┘
            John        is         A         S
                                   │      ┌──┴───┐
                                 easy     to     VP
                                                 │
                                                 V
                                                 │
                                               please
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The character of this structure is that the infinitive complement ' to please' lacking its object follows the Adjective ' easy.'

Transformational Analysis, however, cannot cover all the syntactic behavior of Tough construction. Arlene Berman pointed out that the sequence of Adjective+To-infinitive such as in " easy to please " behaves as a single constituent.[6] With the advancement of lexical grammar, Deborah L. Nanni claims that the constituent should be generated in the lexicon by a lexical rule.[7] She justifies her claim from the following examples.[8]

( 3 )   How easy to tease is John ?
        How simple to fool were the men ?
        How difficult to avoid was the problem ?

( 4 )   John certainly is—and Mary may well be—easy to tease.
        The law boards may be—and the CPA exam definitely was—hard to pass.
        *War and Peace* may have been—but ' Conditions on transformations' certainly was—tough to read.

( 5 )   How easy to tease John is!
        How difficult to study for the exam was!
        How tough to read the book was!

( 6 )   an EASY-TO-TAKE laxative
        rare and HARD-TO-FIND manuscripts
        an EASY-TO-SEW pattern
        a TOUGH-TO-PLEASE boss

In the examples ( 3 ), the rule of WH-movement has fronted the se-
quence into the complementizer position.   The examples ( 4 ) show that
Right Node Raising has been applied to the sequence.   The examples
( 5 ) demonstrate that the head of the exclamatory sentence is a single
constituent.   In the examples ( 6 ), the sequence in question occurs pre-
nominally, the function of which is the same as an adjective's.   These
examples demonstrate that an Adjective+To-infinitive sequence behaves
as a single constituent.   Let us display the internal structure of the se-
quence, making use of a tree diagram, which is given in Figure 2.

  Figure 2
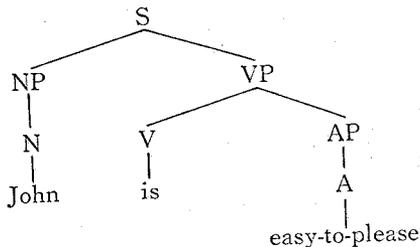


Nanni proposes that the single constituent is a complex lexical   item.
The class of adjective, which forms complex adjective such as easy-to-
please, has productivity.   Therefore she claims that " we can accout for

this productivity within the grammar by positing a lexical rule which combines a transitive verb with an adjective to form a complex adjective." [9]

To sum up, we have seen the two different sources of Tough construction. One is transformationally derived, and the other is lexically derived. To facilitate discussion, we refer to the former as 'Tough-I,' and the latter as 'Tough-II.'

Now we have to consider the necessity for the two types of Tough construction. There are some reasons that both types are needed in an adequate grammar. In the rest of this section, we will focus the discussion on the necessity.

First, as Nanni points out,[10] a tough-type adjective followed by For NP+To-infinitive, or by several infinitives cannot behave as a single constituent. The following examples show it.

( 7 )　*How easy for the children to tease is John?
　　　　*How easy for the children to tease John is!
　　　　*an easy FOR BILL TO FINISH problem

( 8 )　*How difficult to persuade Bill to wear was the coat?
　　　　*How difficult to persuade Bill to wear the coat was!
　　　　*an easy to expect TO FINISH problem

Such a sequence in each example is not a single constituent.

Second, we mention Tough constructions which include an idiomatic expression. See the example ( 9 ).

( 9 )　The ice is hard to break ＿＿＿＿＿ at formal receptions.

To break ice idiomatically means that one eases the feeling of tension. When we use this expression in this meaning, we cannot put the se-

quence, Adjective + To-infinitive, before a noun.

(10)  *a HARD-TO-BREAK ice

It follows that the sequence is derived not by a lexical rule, but by a syntactic rule.

We have seen the reasons for the necessity of the two types of Tough construction. It is reasonable to admit the two sources of this construction.

## SECTION II

In the previous section we have examined the two types of derivation of Tough construction—Tough-I (transformationally-derived) and Tough-II (lexically-derived). This section will be focused upon some theoretical problems concerning the relation of the two types of Tough construction. First we will discuss how the conventional generative grammar can deal with the relation between them. It is pointed out that the conventional theory fails to capture the relation because of the idealization of instantaneous language acquisition. Next, taking up a new model which was outlined by Masaru Kajita and has been developed among the Japanese scholars, we will try to explain the similarity between the two types of Tough construction.

To begin with, we start our discussion with the assumption on which the conventional generative grammar has been based. The studies which have been done so far under the name of generative grammar are based upon the assumption that language acquisition is instantaneous as an idealization. This idealization, as Chomsky recognizes it,[11] is far from a realistic theory of language acquisition. Chomsky, how-

ever, insists that there should be no other way to study language scientifically without this idealization. That is to say, Linguistics does not seem to be mature enough to study language without it. He claims as follows:

> Frankly, I doubt that the simplifying assumption, though obviously false, significantly affects the validity of the analysis based on it. If our initial assumption does indeed seriously falsify the situation, . . . then we would expect to find substantial differences in the result of language learning depending on such factors as order of presentation of data, time of presentation, and so on.[12]

In this way the conventional generative grammar is based on the idealization of instantaneous language acquisition.

Although we recognize that idealization has played an important role in the study of language scientifically, at the same time there will remain many aspects of grammar unexplained if we continue to follow this assumption. In this study we abandon the idealization. Instead we adopt a new model which was advocated by Kajita in 1977.

We shall explain the framework of our model briefly. The model is established not on the idealization of instantaneous language acquisition, but on the theory of language acquisition which reflects longitudinal developments. Let us compare our model with the conventional one in terms of the prescription of rules.[13]

PRESCRIPTIONS

　( 1 )　　A given grammar G contains a set W of rules.

　( 2 )-a　A given grammar G contains a set X of rules.

     -b    (i)   If there is another rule R which satisfies condition
                 C in $G_i^j$,
          (ii)   then a set $Z$ of rules can be containad in $G_{i+1}^j$.

The conventional generative theory has defined the rules of "possible
grammar" with prescription ( 1 ). It means that a set of possible
rules $\Sigma(W)$ is not changed through language acquisition. On the other
hand, prescription ( 2 ), which is the one in our model, consists of two
parts. ( 2 )-a means that a set of possible rules $\Sigma(X)$ is not changed
during the period of language acquisition. $\Sigma(W)$ and $\Sigma(X)$ are de-
fined in the same way. We have to, however, note that by dividing the
prescription into two parts, it is possible to define $\Sigma(X)$ more strictly
and narrowly than $\Sigma(W)$. And ( 2 )-b tells us that a certain rule R
which is not contained in the grammar $G_i^j$ can be added to the grammar
$G_{i+1}^j$ if R satisfies a condition C.

  We adopt the model for the reasons below.

  The first reason is that we can characterize the influences between
rules. For example, if there is some (syntactic or semantic) similarity
between a construction X and another Y, and if X is learned earlier
than Y, than we can capture the parallel in terms of X's influence on
Y. Let us advance our discussion at the concrete level. As we have
seen in Section I, there are two types of Tough construction—Tough-I
and Tough-II. In the conventional generative grammar which is based
on the idealization, every generative rule is assumed to exist without
the order of acquisition. In other words, there is no influence between
rules. Therefore the conventional theory fails to capture the similarity
between the two types of Tough construction. It follows that the sim-
ilarity is only accidental. But if we adopt the model referred to above,

we can give motivation of the similarity to the grammatical theory.

The second reason is that this model provides us with some possibilities of throwing light on the relationship between "core" and "peripheral" grammars. The notion of "core" and "peripheral" are thought to be significant results which the past studies of generative grammar have obtained. The relationship between them is interesting and worthy of further research. Although there are a lot of unsettled problems before us, it is one of the most important works that modern linguistics is faced with. However, now we cannot expect too much from the current generative grammar, since Chomsky and other generativists devote themselves to the study of "core" grammar. It is, however, not enough. It is also necessary to study "peripheral" grammar. Both studies must be carried out under the theory of markedness. Furthermore there may be some hierarchy between "core" and "peripheral" grammars. The study of the relationship between "core" and "peripheral" is indispensable for the theory. Therefore it is important for us to try to probe into some possibilities for the study of this relationship, making use of the model which incorporates language developments into itself.

Another reason deserving mention is that our model is superior from the viewpoint of the restriction of "possible grammar." This does not have much to do with this study. But we recognize that the restriction is important for grammatical theories. For generative theories, the restriction of the notion of "possible grammar" is very significant because we often face the question of which theory is to be chosen among the classes of "possible grammar" which is consistent with linguistic data of children. To define the notion of "possible grammar,"

generative grammar exposes each component to high restrictions. For
example, the base is restricted under X-bar theory and the transforma-
tional rule, "move $\alpha$," is restricted in terms of the choice of $\alpha$ and
the specification of landing site in the sense of Baltin (1982).[14] Our
model can introduce a new way of restricting adult grammar.

For these reasons we adopt the model which is constructed on the
theory of longitudinal development of language acquisition.

## SECTION III

In the previous section we have dealt with the reasons why we adopt
the new model. In this section, adopting the model, we will examine
the relationship between Tough-I (transformationally-derived Tough
construction) and Tough-II (lexically-derived one). The section starts
by asking the question below.

QUESTION: Which is more derivative, Tough-I or Tough-II?
Again we note that the conventional generative grammar based on the
idealization of instantaneous language acquisition has great difficulty in
arising such a question, for there seems to be no influence between
syntactic constructions and lexical ones. Only the model, which is
based upon the theory of developmental language acquisition, can per-
mit such a question.

To answer our question, one may think that the best way is to make
an experiment as to which type children can acquire earlier, Tough-I
or Tough-II. But we soon come to know that we cannot expect too
much from such an experiment. We have to consider the character of
the distinction between Tough-I and Tough-II closely. The distinction
is, to a large extent, theory-internal. It may not exist in reality. There-

fore we cannot examine which type children use in the real situation. We have much difficulty in deciding which type of Tough construction is learned earlier. It follows that we do not have a priori investigation about the question. It is an empirical matter. Therefore we have to examine the matter in an indirect way.

Before entering the main discussion, we explain the outline of this section. First we will demonstrate that the structure of Pretty construction is alike that of Tough–II. Next making use of the report of experiments about language acquisition which Lawrence Solan did, we will try to get an answer to our question.

## III – 1

In this subsection, we will examine the properties of Pretty construction like 'Lucy is pretty to look at.' Such a construction contains the sequence: Adjective + To-infinitive. See the following examples (11).

(11)  Lucy is pretty to look at.
      The music is melodious to listen to.
      Apple pie is delicious to eat.
      That flower is fragrant to smell.
      The stone is heavy to carry.

There is a gap in the To-infinitive complement, which semantically corresponds to the subject in each example.

What we have to note is, however, that Tough Movement cannot be applied to the underlying structures (12), which are ungrammatical.

(12)  *It is pretty to look at Lucy.
      *It is melodious to listen to the music.
      *It is delicious to eat apple pie.

*It is fragrant to smell that flower.

*It is heavy to carry the stone.

Again we have no motivation of deriving the sentences (11) from the sentences (12) by the transformational rule of Tough Movement.

Here we examine the properties of Pretty construction.  The sentences below, which are checked by native speakers, show that the sequence, Adjective + To-infinitive, can behave as a single constituent.  This is the very same property as Tough–II has.

(13)    How pretty to look at is Lucy ?

How melodious to listen to is the music ?

How delicious to eat is this apple pie ?

How fragrant to smell is that flower ?

How heavy to carry is the stone ?

(14)    This apple pie is—and that meat pie may be—delicious to eat.

(15)    How pretty to look at Lucy is !

How melodious to listen to the music !

How delicious to eat this pie is !

How fragrant to smell that flower is !

How heavy to carry the stone is !

(16)    a BEAUTIFUL-TO-SEE view

a MELODIOUS-TO-HEAR birdsong

a FRAGRANT-TO-SMELL flower

a HEAVY-TO-CARRY table

These sentences of Pretty construction correspond to those in ( 3 ), ( 4 ), ( 5 ), and ( 6 ) of Tough–II.  They demonstrate that this syntactic behavior cannot be explained if we adopt Transformational Analysis like Object Deletion.  We can conclude from the examples above that

Pretty construction is, as Tough–II is, derived lexically in the base component.

## III – 2

In this subsection, we shall try to obtain a persuasive answer to our question, making use of the observation in the previous subsection and the report of experiments of language acquisition by Solan. Let us start our discussion with a brief summary of Solan's experiments.

Lawrence Solan proposed that we could select an adequate syntactic rule of Tough construction for the grammatical theory, with the help of the observation of real language acquisition.[15] He compared two generative rules—Tough Movement and Object Deletion, which have produced many argumentations concerning which is more adequate for the grammatical theory. Although Tough construction is assumed to be generated using both rules, they are applied to different underlying structures. If the rule of Tough Movement is applied, we assume the underlying structure as follows :

(17)  It is easy to please *John*.

(The arrow stands for the movement goal of *John*.)

Solan referred to this as the ' Movement Hypothesis.'

On the other hand, if Object Deletion is applied, then the underlying structure is thought to be (18).

(18)  $John_i$ is easy [to please $John_i$].

(The arrow and the mark $\phi$ stands for the process of deletion. NPs with the same subscripts are interpreted as coreferential.)

He referred this as the 'Deletion Hypothesis.' It is important for us to note that the Object Deletion is assumed to generate not only Tough construction, but also such sentences below.

(19)    a. The mattress is too thin to sleep on.
        b. The football is soft enough to kick.
        c. The scene is beautiful to see.

(19)-c is, what we call, Pretty construction. The Object Deletion is such an inclusive rule that it is applied to both Tough construction and Pretty one.

Then Solan examined the relation between the children's ages and the acquisition of Tough and Pretty constructions in his experiments. He indicated that there are three possibilities for the implications that language acquisition may have in choosing between the Movement Hypothesis and the Deletion Hypothesis. The three logical possibilities are shown as follows:

(20)    A. If children have equal difficulty understanding sentences with predicate easy and pretty, then the results are inconclusive. Either the child learns two constructions at about the same time, which is consistent with the movement hypothesis, or he learns a single construction, which is consistent with the deletion hypothesis.
        B. If children have more difficulty understanding sentences with pretty than sentences with easy, then the results support the movement hypothesis. The results also indicate that the movement rule is learned earlier than the deletion one.
        C. If children have more difficulty with predicates such as easy than with predicates such as pretty, then the results support the deletion hypothesis. Furthermore, the results indi-

cate that the deletion rule is learned earlier than the movement rule.[16]

Among the three possibilities, B and C provide us with a key for choosing between Movement Hypothesis and Deletion Hypothesis.

Presenting the sentences (21), Solan examined the relation between the children's ages and the understanding of Tough and Pretty constructions.

(21)     EASY sentences

    a)   The monkey is easy to kiss.

    b)   The tiger is nice to jump over.

    c)   The monkey is fun to bite.

    d)   The tiger is hard to jump over.

    PRETTY sentences

    e)   The tiger is pretty to look at.

    f)   The monkey is delicious to bite.

    g)   The tiger is nice enough to talk to.

    h)   The monkey is too tall to jump over.

The children in the experiments were between the ages of three and five years. Although the experiments were completely finished by seventeen children, five of them were important for Solan's analysis. They correctly interpreted the easy sentences, but misinterpreted the pretty ones. The results of the experiments are presented in Figure 3. From the results, Solan concluded that the Movement Hypothesis is more suitable for the grammatical theory than the Deletion Hypothesis because the results are consistent with (20)-B.

Although Solan compared Tough Movement with Object Deletion, there is another possibility of the derivation of Pretty construction as

A Study of Tough Constructions

Figure 3   Incorrect responses for each subject

| | Subject's age | | | | |
|---|---|---|---|---|---|
| | 4.9 | 5.3 | 5.3′ | 5.4 | 5.8 |
| Sentence | | | | | |
| EASY | (0) | (0) | (0) | (1) | (1) |
| a) | | | | | |
| b) | | | | × | × |
| c) | | | | | |
| d) | | | | | |
| PRETTY | (2) | (3) | (3) | (3) | (2) |
| e) | | × | × | × | |
| f) | | | | | |
| g) | × | × | × | × | × |
| h) | × | × | × | × | × |

we have seen before.   That is to say, Pretty construction is, as Tough–II is, derived lexically in the base.   We refer to this derivational way as the 'Lexical Hypothesis.'   The examples (13)—(16) demonstrate that the Lexical Hypothesis has a more powerful explanation of the linguistic behavior of Pretty construction than the Deletion Hypothesis does.

The next point to be considered is what meaning the results of So-lan's experiments has in connection with the Lexical Hypothesis.

Solan's report shows objectively that children have more difficulty in the interpretation of Pretty construction than that of Tough construc-tion.  What is important for us is that real language acquisition of chil-dren has nothing to do with any Hypothesis.   Whether we adopt the Lexical Hypothesis or the Deletion Hypothesis, the fact that children learn the Tough construction earlier than the Pretty one is not changed.

It is important for us to confirm that the Laxical Hypothesis is ap-plied not only to the Pretty construction, but also to the Tough one. Namely, the Lexicel Hypothesis can be used for both the Pretty and

Tough constructions. Therefore we have good reason to replace the Deletion Hypothesis with the Lexical Hypothesis. That is to say, making use of Solan's results, we can compare the Movement Hypothesis with the Lexical one. The Movement Hypothesis is the hypothesis of application of syntactic rules (transformation). It follows that we can compare syntactically-derived Tough constructions (Tough–I) with lexically-derived ones (Tough–II). From this it is reasonable to propose that Tough–I is learned earlier than Tough–II. Again this analysis is based the observation that the Tough construction consists of two types— Tough–I and Tough–II. This viewpoint was missed in Solan's argument. We show our inference as Analysis I

Analysis I————————————————————————————

   The acquisition of Tough–I is earlier than that of Tough–II.

The next thing is to give a realistic interpretation to Analysis I.

We think it reasonable to assume that Tough–I has some influence on the generation of Tough–II. We can argue by analogy that first the sequence like 'tough to please' is syntactically derived, and that then there is no lexically-derived Tough construction. It means that Tough–I is the model of the generation of Tough–II. The Adjective+To-infinitive sequence which is obtained by syntactic rule is input as data to Tough–II. The lexical rule of Tough–II works and re-analyzes the sequence as a complex adjective.

We can reinterpret Analysis I as follows:

Analysis II————————————————

   Tough–II is more derivative than Tough–I.

## CONCLUSION

This study has centered on the discussion of the motivation of similarity between a lexically-derived construction and a transformationally-derived one in English. We have dealt with Tough construction as an example.

In Section I, we have proposed that the Tough construction should consist of two types: one is the transformationally-derived Tough construction and the other is the lexically-derived one. We have referred to the former as Tough-I and the latter as Tough-II. Our proposal is supported by the fact that the two show different syntactic behaviors.

In Section II, we have dealt with some theoretical aspects of our grammatical model which is based on the theory of longitudinal development of language acquisition. Although the model seems to be not fully developed as a theory, it has some possibilities of throwing light on unexplained parts of grammar which generative grammar cannot cover. Further we have pointed out that generative grammar, which is based upon the assumption that language acquisition should be instantaneous, cannot theorize about the influence between transformationally-derived constructions and lexically-derived ones. Unless we abandon the idealization of instantaneous language acquisition, the similarity between Tough-I and Tough-II turns out to be accidental. On the other hand, our model can give a motivation of the similarity, since one construction is assumed to be a model of the generation of another.

In Section III, we have presented the question as to which type of Tough construction is a model of the other. In other words, which is the basic construction, Tough-I or Tough-II? We, however, have no

a priori investigation about this matter because the distincton between Tough–I and Tough–II is theory-internal.    Therefore we have much difficulty in obtaining an answer from experiments of real language acquisition.    Our answer must be decided empirically.

To get an answer, we have taken advantage of Solan's results of the experiments, which tell us that the Tough construction is learned earlier than the Pretty one.    At the same time, we have shown that the Pretty construction has the same property as Tough–II.    Synthesizing these arguments, we can conclude that it is reasonable to assume that Tough–I is learned earlier than Tough–II (Analysis I).    Then we have given a realistic interpretation to Analysis I.    The process of the generation of the lexical rule of Tough–II is presented by analogy.    And we have reached the answer to our question (Analysis II).

This study is based on the assumption that all the grammatical rules are not equal in their values.    Grammatical rules have hierarchy.    Some of them organize " core " grammar, and others belong to " peripheral " grammar.    There may be some intermediate grammars between "the core" and " the periphery ".    Putting it differently, the theory of markedness has structure.    Our study is a support to the existence of the structure.    In the conventional generative grammar the ordering of grammatical rules in different components has not been touched because the system of grammar is regarded as a mental representation without the notion of time.

The study of markedness has just only begun.    Today only " core " grammar is paid attention to and studied.    As for the hierarchy of rules, we are at a loss what and how to study.    We hope that our study has afforded a clue for the explanation of the hierarchy though our scope

is very narrow.

## NOTES

1.  Masaru Kajita, "Towards a Dynamic Model of Syntax," *Studies in English Linguistics*, 5 (1977), 44–76.

2.  Noam Chomsky, "Current Issues in Linguistic Theory," *The Structure of Language: Readings in the Philosophy of Language*, eds. by J. A. Fodor and J. J. Kats (Englewood Cliff, New Jersey: Prentice-Hall, Inc., 1964), pp. 50–118.

3.  Tough Movement is supported in P. S. Rosembaum, *The Grammar of English Pradicate Complement Constructions* (Cambridge, Mass.: MIT Press, 1967), P. M. Postal, *Cross-Over Phenomena* (New York: Holt, Rinehart & Winston, 1971), J. M. Bresnan, "Sentence Stress and Syntactic Transformations," (*Language*, Vol. 47, 1971), Arlene Berman, "A Constraint on Tough-Movement," (*Papers from the 9th Regional Meeting, Chicago Linguistic Society*, 1973), and R. S. Jackendoff, "Tough and the Trace Theory of Movement Rules," (*Linguistic Inquiry*, Vol. 9, 1975).

4.  Object Deletion is supported in J. R. Ross, "Constraints on Variables in Syntax," (Doctorial Dissertation, MIT, 1967), A. Akmajian, "Getting Tough," (*Linguistic Inquiry*, Vol. 3, 1972), and H. Lasnik and R. Fiengo, "Complement Object Deletion," (*Linguistic Inquiry*, Vol. 5, 1974).

5.  Tough construction is regarded as one of the cases which are covered by WH-Movement in Noam Chomsky, "On WH-Movement," *Formal Syntax*, eds. by Culicover, Wasow, and Akmajian (New York: Academic Press, Inc., 1977), pp. 71–132.

6.  Arlene Berman, "Adjective and Adjectives Complement Construction in English," *Mathematical Linguistcs and Automatic Translation. Report to the National Science Foundation*, 29 (1974), 1–390.

7.  Deborah L. Nanni, "On the Surface Syntax of Constructions with Easy-type Adjectives," *Language*, 56 (1980), 568–81.

8.  These examples from (3) to (8) are extracted from Nanni's paper.

9.  D. L. Nanni, p. 575.

10.  *Ibid.*, p. 573.

11.  N. Chomsky, *Reflections on Language* (New York: Pantheon Books, 1975), p. 15.

12. *Ibid.*, p. 121.

13. This explanation is adopted from Takao Yagi, "Togoron no Yuhyosei Riron (The Markedness Theory of Syntax)," *Gengo*, 13, No. 1 (1984), 238 –48.

14. M. R. Baltin, "A Landing Site Theory of Movement Rules," *Linguistic Inquiry*, 13 (1982), 1–38.

15. Lawrence Solan, "The Acquisition of Tough Movement," *Studies in First and Second Language Acquisition*, eds. by F. R. Ecken and A. J. Iastings (Rowley, Mass.: Newbury House Publishers, Inc., 1979), pp. 83–97.

16. *Ibid.*, pp. 86–7.