Dynamism and Tough Constructions

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In this paper, a tough-moved sentence in English is analyzed within the framework of the Dynamic Model of Grammar developed mainly by Kajita (1977, 1986, 1992). It is shown that a tough construction like The book is easy to read is lexically or pragmatically extended from a simple basic predication sentence like The book is easy through syntactico-semantic discrepancy called meaning-concealment and the rule of syntactic realizaiton. It will be argued that this extension hypothesis can account for many idiosyncratic problems concerning tough constructions, for example, (i) control of an empty subject in an embedded clause, (ii) strict semantic restriction in the selection of embedded verbs, and (iii) difference in syntactic behavior between an embedded infinitival clause of a tough-sentence and that of an eager-sentence.

KEYWORDS: tough, syntax, linguistics, semantics

1. Introduction

The purpose of this paper is to provide an explanation for some of the elusive problems inherent in Tough-Construction (TC) under the framework of the Dynamic Model of Grammar (DMG). We shall be mainly concerned with the following problems:

(A) The subject in the embedded infinitival clause must be obligatorily controlled by the object of the for-NP phrase (when it is present), e.g., This book is easy for me [PRO_{γ} to read], but why?
(B) There is narrow restriction on the selection of verbs in the embedded clause, e.g., This book is easy for me [to read/ *want], but why?

These phenomena have so far been pointed out in a number of works, but dealt with as lexical idiosyncracies of easy-type adjectives when they appear in TC. They should, of course, be explained in any adequate grammar, but it seems that there have been few works which have attempted to give systematic answers to the above questions 'why?'. In section 2, we will present a brief sketch of some of the basic concepts assumed in DMG, in order to facilitate an understanding of the following discussion of how DMG can explain (A) and (B), as well as other problems inherent in TC.

2. Basic Concepts of DMG

Children are assumed to acquire language by continually restructuring their grammar (G) on the basis of their biologically determined language acquisition device (LAD) as new data become available to them. Thus, the full process of language acquisition may be schematized as follows:

\[
\begin{array}{cccccccccccc}
1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 & 12 \\
\uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\
D_1 & D_2 & D_3 & D_4 & D_5 & D_6 & D_7 & D_8 & D_9 & D_{10} & D_{11} & D_{12} \\
\end{array}
\]

LAD may consist of several components, an essential one of which is supposed to be a Universal Grammar (UG) representing the pre-existing innate language faculty. We can say that UG and other components interact with each other and enable the language-learner to acquire the knowledge of a particular language on the basis of the data available to him or her. One of the major goals of linguistic theory is to determine the nature of UG; that is, we have to ask what kind of information UG contains.\(^1\)

As Kajita (1986, 1992) has pointed out, there are at least two views of UG. One of them has been adopted by the theories of generative grammar in accordance with a highly idealized instantaneous model of language acquisition. We may call it 'the static, output-oriented view'. On this static view, only the initial LAD\(_1\), the final G\(_n\) and a total sum of D\(_i\) in (1) will be taken into consideration, with all the other intermediate stages ignored, and the following theory-format is assumed:

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\(^1\)This paper is a revised version of one part of Asakawa and Miyakoshi (forthcoming). I am grateful to Todd Holden for providing many stylistic suggestions.

\(^1\)Whether the LAD or the UG-principle is constant or not in the course of language acquisition is controversial, but not directly relevant to our discussion here. What is claimed here is that the LAD should contain the principles which govern the transition from G\(_i\) to G\(_{i+1}\).
[I] Rules of type \( X \) are possible in \( G \), where \( X \) is characterized exclusively in terms of the properties of adult grammars \( (G_n) \), with no reference to intermediate grammars (from \( G_t \) to \( G_{n-1} \)). (Kajita 1992: 2)

DMG adopts a second view of UG, that is, 'the dynamic, process-oriented view'. This means that possible grammars can be partly characterized by a set of constraints on the process of language acquisition, not wholly determined by the properties of the final state of acquisition. In DMG, it is thought reasonable to assume that UG includes information concerning some possible extension operations which 'are performed on the already acquired grammar when moving to the next new stage of development' (Ike-uchi 1991: 109), as well as information concerning rules or principles which determine the most fundamental features of natural language.

In order to capture its extensional idea, DMG assumes the following theory-format:

- II A. Rules of type \( X' \) are possible in \( G \).
  - If rules or structures of type \( Y \) are in \( G_t \), and a certain set of conditions \( C \) are satisfied by \( Y \) in \( G_t \), then rules or structures of type \( Z \) are possible in \( G_{t+1} \). (superscripts: particular languages; subscripts: stages of acquisition)

II-A specifies intra-stage basic rules or principles which are constant throughout language acquisition; a set of rules of type \( X' \), possible at any stage \( G_t \), are assumed to be language-universal and far more restricted than rules of type \( X \) in [I]. II-B specifies interstage transition principles; the principles which govern the extension from \( G_t \) to \( G_{t+1} \). Rules of this type can account for how and why a new rule or structure is incorporated into the grammar. \( C \) is a set of general conditions that activate the introduction of \( Z \) or the extension of \( Y \) into \( Z \), when a grammar \( G_t \) develops into \( G_{t+1} \).

Kajita (1977) proposes several activating conditions. One of them, which is to be employed in the following discussion, is called syntactico-semantic discrepancy (SSD). SSD means the disagreement between form and its meaning; in other words, a case in which syntactic structure \( F \), whose canonical semantic representation is \( M \), is semantically interpreted as \( M' \) as distinguished from the canonical \( M \). When it emerges in linguistic data, SSD is supposed to function as a driving force which will make \( F \) directly correspond to \( M' \), thereby removing the discrepancy, and that a rule or structure which serves this function will be newly incorporated into the grammar.

To illustrate extension triggered by SSD, consider the following:

1. Those people are far from innocent.
2. These sentences may have close to the same meaning.
3. There are next to no statistical data available. (Kajita 1977: 51)

Here, all the italicized quasi-idiomatic phrases have the same internal structure and the same adverbial function. This is not a coincidence, so we have to look for an answer to the question why the extraordinary [ADJ P] expressions in (2) can be interpreted adverbially. Let us consider the far from case. Ordinarily, as (3) shows, the syntactic head of AP is interpreted as the semantic head.

3. The city is [AP [A far] [P from the airport]].

Thus, the adjective far in (2a) should originally be the syntactic head of AP, as will be shown in the following structure:

4. Those people are [AP [A far] [P from [A innocent]]].

But innocent, not far, is semantically felt to be the head, and far from functions as if it is an adverbial modifier just like hardly in (5).

5. Those people are [ADV hardly] [A innocent].

How can this discrepancy be explained? Under the static, output-oriented grammar, in order to accommodate the phrases in (2), the following type of phrase structure rule has to be permitted in the grammar: ADVP \( \rightarrow \) ADJ P. However, this clearly violates the rule-schema imposed by X-bar theory, and cannot account for the reason why it is only a restricted class of [ADJ P]'s that are permitted by the rule. Even if this phrase structure rule were allowed, such a grammar would not be able to explain its peripheral nature.

Let us consider an explanation by the dynamic, process-oriented grammar. Suppose that (3) and (5) have already been in \( G_t \) in the course of language acquisition, and that (4) in question is now available as a new datum. Here, SSD emerges as head-nonhead conflict. In order to eliminate the conflict and make a semantic head directly correspond to a syntactic head, a rule of 'syntactic reanalysis' is newly introduced into the next grammar \( G_{t+1} \), and transforms (4) into the following (6). This reanalysis is assumed to be based on (5); that is, (5) serves as a model structure for this rule introduction on the grounds of the same meaning as (4). This is what we call the model-dependent extension.

6. Those people are [AP [ADV far from] [A innocent]].
A set of rules in $G_{i}$ (Y in theory-format [II-B]) that generates (3) and (5) is more basic, in this sense, than a rule of syntactic reanalysis (Z), which is said to be 'derivative' or 'based upon' Y. Thus, DMG can account for how far from is derived and why it is not felt to be a basic adverbial phrase.

Human language is a system of heterogeneous grammatical rules, ranging from the most basic to the most peripheral. The dynamic point of view will make it possible to theoretically separate the earlier acquired basic rules from subsequently acquired derivatives. See the works cited above for further details and theoretical perspectives on DMG. With this background in mind, we will next turn to the analysis of TC.

3. Dynamic Extension

In what form does SSD manifest itself and what kinds of accompanying rules or structures does it develop? It goes without saying that they have to be empirically determined. As one type of manifestation of SSD, Suzuki (1985) has proposed what might be called a meaning-concealment (MC) and a rule of syntactic realization (RSR) that it develops. The notion of MC is defined as follows. Suppose that the canonical semantic representation of syntactic form F1 is M1. Now suppose that there is a certain context in which F1 is interpreted as having the meaning M2 containing M1 as its subpart. Since only a subpart of M2 is syntactically expressed in F1, it seems that the remaining is concealed within F1. In this case, F1 is said to satisfy the condition of MC. In order to eliminate SSD, RSR is introduced into the grammar and creates the syntactic form F2 that directly yields the full meaning M2. In short, an unexpressed part of M2 will be syntactically realized by RSR. We will show that MC and RSR provide an explanation for the origin of tough movement, that is, the problem of when and how TCs come into being in the grammar.

3.1 Basic Extension

In what ways are concealed meanings in TC to be characterized? Let us compare the following sentences:

(7) a. This book is easy.
   b. John is easy.

(7a) is completely acceptable, but (7b), which is very odd when located in isolation, needs some context in order to become acceptable. Why do we have this difference of acceptability in simple predicative constructions like (7)? It has been noted that a subject which an easy-class adjective selects must semantically denote some activity normally associated with the subject (see Nanni 1978). This shows that the subject book in (7a) can inherently denote some event or process which involves the book itself, normally reading, while the subject John in (7b) cannot have any activity associated with it unless it is located in an appropriate context. In other words, we can say that a default verbal interpretation is available in the noun book, but not in John.

We know from (7) that there are two types of MC. In (7a), a concealed meaning is lexically determined, in the sense that it needs no contexts and that its interpretation is derived from the semantics of the noun book. However, in (7b), it has to be pragmatically determined: it is only when located in a certain context that the subject John could be interpreted, for example, as pleasing John or loving John. Note, incidentally, that lexically determined meanings are a subset of pragmatically determined meanings. Thus, to read is a verbal meaning that can be determined either lexically or pragmatically. There might be some contexts in which to read should be pragmatically determined in (7a).

On the basis of these observations, Miyakoshi (1992) has proposed that simple predication sentences such as (7) are the most basic constructions of the easy-class adjectives, and that TC of the following type is extended from (7a) in terms of the lexically-determined MC and RSR:

(8) This book is easy to read.

Such an extensional relation also applies to the following pairs of TC, in which problem and game are supposed to be closely associated with the activity which denotes solving and playing, respectively:

(9) a. This problem is difficult.
   b. This problem is difficult to solve.

(10) a. The game is easy.
    b. The game is easy to play.

Pustejovsky (1991, 1992) has proposed that logical metonymy such as (7a) can be explained in terms of the lexical semantics of nouns and adjectives, plus the following semantic rule:

(11) Type Coercion: A semantic operation that converts an argument to the type that is expected by a function, where it would otherwise result in a type error.

Suppose that the adjective easy takes an external argument (the subject) and an optional internal argument (for NP) and assigns its external argument a $\theta$-role ($\theta_e$) which denotes an event.
easy: $\theta_E (\theta)$

Pustejovsky (1991) has pointed out that, in characterizing the lexical semantics of the noun *book*, reading and writing, among a number of imaginable activities, should be given a specially 'privileged' status, because they are fundamental semantic factors in our basic knowledge about a book. The lexical conceptual structure of *book* contains information as follows: a book is a writing; a printed physical object; one which is read; and one which is created by an act of writing.

Given the sentences of (7), (11) tries to coerce the meaning of a subject into a semantic type $\theta_E$ required by easy. In (7a), this is possible, since *book* has the lexical information showing that it is related to an event, and the interpretation for (7a) can be obtained: *reading/writing the book is easy*. In (7b), however, the subject *John* contains no information that denotes an event, which renders (7b) unacceptable. But, if (7b) appears in an appropriate context, it is possible to supply *John* with an event interpretation associated with him, through information given in the context.

Dynamically, it is assumed that, at a certain intermediate stage of language acquisition, a child acquires $G_i$ which contains the following set of rules or structures (13), and that, at the next stage $G_{i+1}$, TC is lexically or pragmatically derived from the basic simple structure (13c) using the analogy of the model structures (13d):

(13) $G_i$: (a) lexical semantics of *easy*-class adjectives, i.e., (12).
(b) lexical semantics of nouns.
(c) Base: This book is easy./John is easy.
(d) Model: (i) John is ready/glad to eat an apple.
(ii) It is hard/easy to read this book.

(14) $G_{i+1}$: This book is easy to read./John is easy to please.

The model structure (13dii) suggests that the lexical category ADJ can take an embedded infinitival clause, and (13diii) shows that an *easy*-class adjective can be followed by an infinitival clause. So, if these model structures have already been internalized in $G_i$, they would provide a powerful force to develop (13c) into (14), making it quite easy to syntactically realize [to VP] and adjoin it to the right of *easy*. Once TC is introduced in $G_{i+1}$, it will be gradually grammaticalized into conventional construction. However, the derivative nature of TC is supposed to be preserved in the final adult grammar, and it is through this preservation, as will soon be discussed, that TC displays many peculiarities of its own.

Our proposal is quite compatible with the suggestion by Williams (1983: 442) that, in *John is easy to please*, 'the basic subject predicate structure is *John is easy*, and there is further a clause which tells how John is easy.' One consequence of our theory is that TC can be classified into several groups in terms of the semantic relationship between subject and embedded infinitival clause. Nanni (1978: 91) has pointed out the following three types of roles which an infinitival clause may play in TC:

(A) to make some activity that we normally associate with an NP explicit: *The book was easy to read/write.*
(B) to specify some activity that we do not normally associate with the matrix subject: *The book was easy to criticize/review.*
(C) to specify some activity for an NP which is not normally associated with a work-creating activity: *The rock is easy to hide.*

(A) is derived under the condition of the lexically-determined MC, while (B) and (C) are derived under the pragmatically-determined MC. From the viewpoint of a scale of the degree of pragmatic association, (A), (B) and (C) can be said to be ordered from low to high. It might be claimed, as in Miyakoshi (1992), that they were also ordered from the most basic to more derivative in the DMG sense. However, there seems to be no evidence available which supports the idea that the lexically-determined MC is more basic than the pragmatically-determined MC, or that (B) and (C) must presuppose prior development of (A). See also the acquisition data in the following section.

It is predicted by our hypothesis that a syntactically realized clause should include a gap referring to the subject. If there is no gap, it should become semantically anomalous.

(15) *This book is easy to read *Moby Dick*.

As for the gap in TC, Stowell (1985) has pointed out that it must not be an adjunct gap:

(16) *Today will be easy [to catch the bus e]*

While Stowell attempted to account for this fact on the basis of a reformulation of ECP, Browning (1987) has claimed that it can be explained by factors other than ECP. For example, *easy*-class adjectives cannot appear with adverbial NP's, as in (17), which Browning suggests may be responsible for the ungrammaticality of (16).

(17) *Today will be easy.
Her suggestion is quite compatible with our hypothesis, because it is our contention that (17) is a basic structure of (16). Thus, it is natural that the lack of grammaticality of (17) should prompt a lack of grammaticality of a derived structure (16).

3.2 Further Extension

Basically, object raising for TC is lexically determined by easy-class adjectives. However, there are cases that are not triggered by adjectives. Kajita (1977) has pointed out the following type of TC:

(18) a. It does not require specialized knowledge to read the book.
   b. The book does not require specialized knowledge to read.

(19) a. It is far beyond the scope of this study to examine the question.
   b. The question is far beyond the scope of this study to examine.

Examples of this type have so far been pointed out by others (e.g., Chomsky (1981), Jones (1991)) as constructions sharing characteristics with TC, but there has been no account as to how they are related to TC.

Consider, for instance, the following:

(20) a. It took all day to help John bake the cake in that oven.
   b. The cake took you all day to help John bake it in that oven. (Chomsky (1981: 319))

(21) a. It cost $2.00 for John to buy that book.
   b. That book cost $2.00 for John to buy it. (Jones 1991: 226–7)

The italicized predicates in these sentences have the meaning of ‘the scale of easiness’ in common with easy-class adjectives. As Kajita has pointed out, it is supposed that a rule for TC is semantically extended under the condition of syntactico-semantic overlapping to any predicate sharing the sense of the scale of easiness. It is apparent that this semantic extension is responsible for the derivation of the above (b) sentences.

3.3 Acquisition Evidence

Let us now consider the acquisition evidence for our hypothesis. Our theory predicts that children will acquire (13c, d) before they acquire TC. This order of acquisition can be confirmed in data from the early stages on the acquisition of English. Thus, see the following utterances using the adjective hard, in which relatively clear cases have been extracted from the longitudinal data collected by Roger Brown and Stan Kuczaj stored in computer text files as part of the Child Language Data Exchange System (MacWhinney & Snow 1990).3

(22) Brown: Sarah
   2;4: ‘hard.’ (to put a ribbon on a head)
   3;1: ‘it’s hard.’ (to put the Band-aid on a finger)
   3;6: ‘this is hard.’ (to carry a thing)
   4;1: ‘this is hard to do.’
   4;4: ‘the puzzle’s hard to do.’
     ‘the corner’s hard to get down.’
     ‘It’s hard to xxx. hard to open it.’
     ‘it is hard to open.’
   4;7: ‘it’s not hard to get off.’
   5;0: ‘dis button’s hard.’ (to push this button)

(23) Kuczaj: Abe
   2;7: ‘I can’t do it. It’s too hard.’
   2;10: ‘That’s hard.’
   3;0: ‘It’s hard to put this head on.’
   3;3: ‘crescent is really hard to say.’
   4;2: ‘it’s too hard for me.’
   4;3: ‘because meat is so hard to drink.’
   4;5: ‘this is hard to get on.’
   4;6: ‘you maked it hard for me to jump.’
   4;9: ‘that’s hard to get off this time.’

Though these data do not completely corroborate our theory, they are not inconsistent with our predictions. In both (22) and (23), the first use of hard appears in the simple predication sentences with a pro-sentential that or

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3The numbers at the front of the sentence refer to the child’s age (2; 3 means 2 years, 3 months).
3This appears in the following context: ABE: Daddy, does this look like two crescents? FAT: Two what? ABE: Two crescents, crescents of moon. FAT: Oh, two crescents? ABE: Yeah. FAT: It sure does. ABE: Crescent is really hard to say.
it. This shows that when they learn an easy-type adjective, children never fail to acquire the lexical information (12). TC (or TC-like sentences) first appears at the age of 4;0 in Sarah and 3;3 in Abe. From the same database, we find that, before they attained that age, they had already uttered sentences like (13c, d) as shown in the following. These will serve as hypothetical model sentences.

(24) Sarah: 3;11: ‘she was lonesome to see you.’
(25) Abe: 2;8: ‘he said it’s eight o’clock time to get up’

2;8: ‘I’m ready to play now’
2;11: ‘I’m too little to play this game.’
3;1: ‘they are too high to reach’
3;3: ‘Yuppy’s pretty smart to put all the puzzle pieces in.’
3;3: ‘it would be good to get Mommy a surprise.’

According to an experiment designed by Solan (1979), children have less difficulty understanding the eager-type sentences than TC. This is also consistent with our hypothesis that children learn (13c)-type sentences earlier. It is well-known that TC comes quite late in development, as shown experimentally by Chomsky (1969) and Cromer (1987). However, the above data may be interpreted to suggest that, given adequate contextual information, children can easily utter TC or TC-like sentences by adding to the simple sentence the verbal meaning implied by the context. This appears to be the very first stage of the development of TC, and it will take children several years to completely integrate TC into their grammars. Thus, our theory can explain how the prototype of TC emerges in children’s grammar.

4. Dynamic Explanation

Having illustrated the dynamic approach to TC, we would now like to consider how this approach can account for the properties mentioned in the introduction.

We have assumed that TC is basically derived from the structure (26a) under the condition of MC (one type of SSD):

(26) a. Base Structure: NP₁ is EASY (for NP₂).
   b. Derived Structure: NP₁ is EASY (for NP₂) [to VP].

[to VP] in (26b) is a syntactic realization of the concealed meaning of NP₁. On this assumption, it is possible to claim that the [to VP] of TC should inherit the semantic properties of the basic simple predication structure (26a). These semantic properties will inevitably determine the syntactic properties of [to VP]. In this section, we first discuss the semantics of the base structure (26a), as outlined by Nanni (1978). Then, it will be shown that many peculiarities of TC can be explained as automatic consequences of the extension hypothesis.

4.1 Some properties of the basic structure

Nanni (1978) has argued that the easy-type adjectives display an invariable range of meaning, whatever the constructions in which they occur. As concerns the semantic properties of a simple predicate construction (26a), Nanni’s discussion can be summarized as follows:

(A) The subject NP₁ must be associated with an activity that creates work for someone else.
(B) The easy-type adjective describes the ‘cost’ that an activity or event which involves the subject NP₁ imposes on an individual NP₂, two reflexes of which are the following:
   (i) the ‘effort’ that NP₂ must expend in the process of actualizing some event.
   (ii) the ‘suffering’ that NP₂ experiences as a consequence of the actualization of some event.
(C) The object NP₂ of a for-phrase must be interpretable as the agent of the activity that is associated with the subject NP₁.

(B) and (C) are important for our discussion. Consider the following from Nanni (1978: 74):

(27) Mary’s rigorous schedule was hard for the family.

The activity involving the schedule, e.g., adhering to it, imposes a cost on the family. On the effort reading, it means that the family can only adhere to the schedule Mary has set for them with difficulty, while, on the suffering reading, the family experiences mental stress as a result of adhering to the schedule. As for (C), Nanni compares (27) with the following:

(28) Mary’s rigorous schedule was hard on the family.

This is ambiguous in two ways; (i) the family assumes the cost that arises from their own actions, i.e., the family adheres to the schedule, or (ii) the family assumes the cost of Mary’s actions, i.e., Mary adheres to the schedule. However, (27) is not ambiguous; it permits only (i). According to the extension theory, it is predicted that these
4.2 Control of PRO

It is impossible for TC to contain an overt lexical subject in its embedded infinitival clause.

(29) *The book was easy for me [for John to read].

Following GB theory, the subject must be PRO and interpreted as co-referential with the object of a for-NP phrase.

(30) The book was easy for John [PRO_i/\_ to read].

When a for-NP prase is absent, PRO must be interpreted as unspecified, with an index arb assigned.

(31) The book was easy [PROarb to read].

As is well known, this restriction is limited to TC. It does not apply to the subject of an infinitival clause in another type of construction in which an easy-type adjective occurs.

(32) a. It was easy for me [for John to read this book].
   b. It was easy for me [PRO_i/\_ to read this book].

In order to account for why the subject of an embedded clause must be PRO in TC, Chomsky (1977: 106–7) has proposed the following base condition which specifies an obligatory PRO subject:

(33) In the underlying structure [NP is predicate (for NP) [s for \(\alpha\) to VP]], \(\alpha\) is PRO if S is subject to wh-movement.

However, this is not an explanation of the problem, but simply a description of the fact that TC has no subject in its embedded clause. It is also clear that this proposal provides no explanation for the problem of why it is only the object of a for-phrase that controls PRO.

Nanni (1978: 97–8) has given an explanation to this problem in terms of meaning conflict. Consider the following:

(34) *The office was tough for the boss [for the secretary to leave early].

Following (B) and (C) in 4.1, the adjective tough describes the cost to an individual of the activity which involves the matrix subject (i.e., the secretary’s leaving the office early), and the individual assuming that cost is the object of the for-phrase (i.e., the boss). Nanni (1978: 97–8) has argued that ‘the individual assuming the cost (i.e., the object of the for-phrase, the boss) is not the individual that is assuming the cost associated with performing some activity that involves the matrix subject (i.e., the secretary)’, so that (34) ‘makes, conflicting demands with respect to determining which individual is assuming the cost’. Thus, she has concluded that, in order to avoid conflict, the subject in the embedded clause must be coreferential with the boss.

Apparently, Nanni’s argument seems very convincing, but we have to ask whether her claim is correct. Note that the cost is imposed on the boss and the secretary in quite different ways in (34). If the cost of the boss has nothing to do with the cost of the secretary, there would be no ‘conflicting demands’. For example, consider the following non-tough-construction, which has almost the same meaning as (34):

(35) It was tough for the boss [for the secretary to leave the office early].

The adjective tough permits both the effort and suffering readings. On the effort reading, the boss must expend some effort in bringing about the event, i.e., the secretary’s leaving the office early. On the suffering reading, the boss experiences suffering as a result of the event. On either reading, the boss assumes the cost imposed by the event described by the embedded infinitival clause. But at the same time, the secretary, as a performer of the activity, also assumes the cost. But there is no meaning conflict in (35), because the cost the boss assumes is different from the cost the secretary assumes. The same is true of (34), so (34) would not have any meaning conflict as has been claimed by Nanni.

Nanni (1978) has correctly noticed the importance of the direct semantic relationship between TC and simple predication sentences, but has failed in her accounting for (34). Now, we know the reason: she has adopted the traditional ‘static’ approach to TC. In our ‘dynamic’ approach, some of the characteristics of derived sentences can be explained on the basis of the properties of basic sentences. Compare the following pair:

(36) a. The music was hard for John.
   b. The music was hard for John [to listen to].

As has already been noted, the music in (36a) will normally be interpreted as listening to music, and John is interpreted as the person who listened to the music. Our hypothesis claims that the embedded infinitival clause in (36b) is what has syntactically realized this concealed action of listening. Therefore, it follows that John (and
only John) must be understood as the subject of the embedded clause. When *for John* is absent in (36a), the person who listened to the music is some unspecified person, so that the subject of [to listen to] in (36b) should also be an unspecified person. Thus, the only possible indexation patterns our theory predicts are the following, (a) and (b), and there should clearly be no possibility that a lexical subject will appear in the embedded clause:

(37)  a. The music was hard [PRO_{eq} to listen to].
     b. The music was hard for John, [PRO_{eq} to listen to].
     c. *The music was hard for John [for his son to listen to].

It is well-known that PRO cannot be controlled by the matrix subject:

(38)  *John, is easy [PRO_{eq} to please people].

The semantic aberrancy of this sentence can be accounted for in a quite elegant manner by utilizing a dynamic approach. Recall that PRO in (38) should be controlled by the object of the *for-NP* phrase, which is covert here. Thus, we will have (39) underlying (38).

(39)  John, is easy (for John, [PRO_{eq} to please people]

However, this is impossible, because the following coindexation in the base structure is not allowed.

(40)  *John, is easy for himself.

Why, in a basic simple predication sentence, can the object of a *for-NP* phrase not be bound by the subject? Following Jones (1991:225), this is because of the semantic condition that ‘the notion of ‘cost’ apparently does not include the possibility of one’s own cost to oneself’.

4.3 *Restriction on the Embedded Verb*

It is well known that embedded subjects in ECM constructions, small clause complements and the complementizerless finite complement clauses of bridge verbs can be extracted by wh-movement. However, this is impossible for TC. See the contrast in grammaticality between (41) and (42) from Browning (1987: 289):

(41)  a. Who, do you believe [e, to be honest]?
     b. Who, do you consider [e, honest]?
     c. Who, do you believe [e, is honest]?

(42)  a. *Mary, was difficult for Jane [to expect [e, to recover]].
     b. *Mary, is easy for me [to believe [e, to understand the problem]].
     c. *Mary, was difficult for Jane [to believe [e, had left the hospital]].
     d. ?Mary, was difficult for anyone [to consider [e, arrogant]].

The following sentences (also from Browning) show that object gaps are as bad as subject gaps: objects cannot be extracted out of these embedded clauses, either.

(43)  a. *Mary, was easy for Jane, [to expect [PRO_{eq} to like e]].
     b. *This problem, is difficult for me [to believe [Mary to understand e]].
     c. *Mary, was difficult for John [to believe [we had not visited e, in the hospital]].

Considering the purposive clauses in which the same effect appears as that achieved under TC, Browning (1987) suggests that there is a “purposive-epistemic clash” in these sentences: that is, an epistemic verb cannot satisfy the agent subject condition required by a purposive interpretation.

(44)  a. *I sent the present, to you, [PRO_{eq} to expect [e, to please your children]].
     b. *I bought the dog, for you [to believe [Mary to like e]].

Browning proposes that (44) would be explained if “the infinitival OWM constructions share a kind of inherent purposive aspect to their semantics (p. 315)”. However, this cannot be applied to TC because, as she has noted, it is not possible to interpret the infinitival clause in TC as purposive: an *easy*-type adjective never takes a purposive PP, as does a purposive construction.

(45)  a. I bought a tent to take camping trips in the Rockies.
     b. I bought a tent for camping trips in the Rockies.

(46)  a. This topic is difficult to discuss calmly.
     b. *This topic is difficult for calm discussion.

Browning’s semantic explanation seems to be on the right track and the problem is what inherent semantic properties TC has in its embedded clause.

Regarding these properties, Jones (1991: 147–8) points out that a verb in an embedded clause in TC should be
interpreted as intentional or active, as shown in the following:

(47) a. This kind of operation is easy to get/?be anxious about.
b. This book is easy to get/?be tired of.

The intentionality condition bearing on the type of verbs has been discussed in greater detail by Nanni (1978). According to her, a verb in a TC-embedded clause must specify the agent’s intention. Thus, even the passive, if it can be interpreted as intentional, can occur in the embedded clause.

(48) a. The doctor was hard for John to be examined by.
b. *The prize was hard for John to be given.

The try to do test shows that only the passive in (48a) is intentional:

(49) a. John tried to be examined by the doctor.
b. *John tried to be given the prize.

Even among the stative verbs, intentional ones can appear in the embedded clause. Compare the following sentences:

(50) a. The lecture was hard for me to understand.
b. Your cousin was difficult for me to like.

(51) a. *That expensive dress was easy for Mary to want.
b. *The hardcover edition was hard for the teacher to prefer.

Now, why does TC have such a restriction? Nanni (1978) has not provided any explanation for its origin. Let us consider again the following basic simple predication sentence:

(52) The problem was hard for John.

Recall that the easy-type adjective has the cost reading, which has two reflexes of the effort and suffering readings. In (52), as Nanni (1978) has pointed out, the effort reading is dominant: though the suffering reading is not impossible, it would need a powerful context. (52) means that John had to expend some effort in actualizing the event normally related to the subject, that is, solving the problem. It is apparent that the semantics of the effort reading is the relevant factor that restricts the selection of the verb in TCs embedded clause.

Let us consider what the ‘effort’ implies in our real world. Firstly, it implies the agent: a person expends effort toward what he himself is doing. Secondly, and importantly, it implies the agent’s intention: a person does not put effort into work that he is doing reluctantly. It is clear that, in the normal situation, the effort is directly associated with the agent’s intention. Therefore, if TC like the following (53) is based upon (52), it automatically follows that the embedded clause has to be interpreted as intentional.

(53) The problem was hard for John to solve.

This intentionality restriction may be one of several factors that constrain the extractability of an element from the embedded clause, as Nanni (1978) has pointed out. Thus, compare the following sentences from Browning (1987: 289):

(54) a. *Mary was difficult for Jane to expect [e to recover].
b. ?Mary was difficult for anyone to consider [e arrogant].

Though there is an intentional-epistemic conflict as shown in (43), the subject extraction is much more acceptable in the small clause (54b) than in the infinitival clause (54a). The try to do test (55) shows that the embedded clause in (54a) is not intentional, while that in (54b) is intentional; or it might be correct to say that the degree of intentionality in (54b) is higher than in (54a). This difference may be reflected in the difference of grammaticality in (54).

(55) a. *Jane tried to expect Mary to recover.
b. Everyone tried to consider Mary arrogant.

4.4 Adjunct-like Behavior

Our dynamic hypothesis predicts that the infinitival clause of TC is not a pure argument of the adjective, as is that of the eager-type adjective, so that it will behave syntactically as something like an adjunct. When an infinitival clause is syntactically realized and adjoined to the base structure, a problem will arise as to the derived structure of TC: that is, to which node in the base structure should the infinitival clause be adjoined? Miyakoshi (1992) has assumed that it is adjoined to AP, i.e., the nonargument position of the adjective. Thus, TC will have something like the following structure:
(56) The book is \([_{AP \in A} \{_{easy}\} [_{CP \in PRO \to read}]]\)

This differs from the structure of a true complement to the eager-type adjective, where the adjective and the infinitival clause are sisters:

(57) John is \([_{AP \in A} \{_{eager}\} [_{CP \in PRO \to study English}]]\)

There are a few pieces of evidence that support (56). First, consider the following from Contreras (1993: 5):

(58) a. John is eager to please, but Bill is reluctant to.
    b. *John is easy to please, but Bill is hard to.

Contreras (ibid: 5) claims that 'to can only properly govern a null VP if the CP immediately containing to is a complement'.

(59) a. John persuaded Mary to leave, and Fred persuaded Jane to.
    b. *John runs to stay fit, and Bill swims to.

If this is correct, the ungrammaticality of (58b) shows that easy does not take a complement, but an adjunct. Secondly, consider the following from Iwakura (1992: 143):

(60) a. John is eager for further information.
    b. What John is eager for is further information.

(61) a. John is eager to please.
    b. What John is eager for is to please.

These indicate that a complement can occur in the focus position of the pseudo-cleft sentence. However, the infinitival clause in the easy-type adjective cannot be pseudo-clefted, as shown in the following:

(62) a. John is easy to please.
    b. *What John is easy to is please.

Thirdly, consider the following well-known nominal expressions:

(63) a. John’s eagerness to please
    b. *John’s easiness to please

On our hypothesis, they are assigned the following structures (65a, b), respectively:

(64) a. \([_{NP John’s} \{_{[N} eagerness \ CP to please]}\]
    b. \([_{NP John’s} \{_{[N} easiness \ CP to please e]}\]

Note that, in Chomsky (1977: 110), (64b) has been assigned the same structure as (64a) as in the following:

(65) \([_{NP John’s} \{_{[N} easiness \ CP to please e]}\]

Then, Chomsky has argued that (65) has the structure of a relative, but the rule of relative interpretation cannot be applied to it, and that this is responsible for the ungrammaticality of (63b). This explanation is convincing, but if the structure of a relative is crucial, (65) should be replaced with (64b) or something of that sort, since a relative clause functions as an adjunct to a noun, not a complement.

\(^{4}\)Contreras (1993) has also pointed out the following facts as evidence on behalf of the adjuncthood of the tough-clause.

(i) a. When was Mary reluctant [to speak e]?
    b. *When was the car easy [to fix e]?

Contreras has argued that, since extraction of an adjunct out of an adjunct is impossible because of its ECP violation, it follows from (i) that the embedded clause in (ib) is not an argument but an adjunct. However, this would be untenable if the movement-to-COMP analysis in the GB model was adopted. On this model, we have the following structures for (ia, b), respectively:

(ii) a. \([_{CP\{e\}_{[CP PRO to speak e]}\}]
    b. \([_{CP\{e\}_{[CP PRO to fix e]}\}]

Following the definition of barriers in Chomsky (1988), CP in (a) is not a barrier. However, in (b), CP is a barrier for e, because CP immediately dominates IP and IP is a Blocking Category for e, so that e violates ECP. Notice that the barrierhood of CP in (b) does not depend upon whether it is an argument or adjunct to easy.

Note that (ib) raises a problem for the reanalysis proposal discussed in Chomsky (1981:312), because there seems to be nothing to prevent the underlying structure of (ib) from being reanalyzed into (iii), just as that of (iva) is reanalyzed into (ivb) in order to undergo wh-movement.

(iii) The car was \([_{CP\{e\}_{[CP PRO to fix t when]}\]}

(iv) a. Which violins are the sonatas easy to play on?
    b. The sonatas are \([_{CP\{e\}_{[CP PRO to play t on [wh-violins]}\]}

\(^{4}\)
The above facts show strongly that we should structurally distinguish TC from the *eager*-constructions. Among a variety of linguistic theories, it is only our dynamic theory that can provide a principled account for why and how those facts should be distinguished.

5. Conclusion

Under the framework of DMG, a linguistic phenomenon can be viewed as being extended from more basic structures, inheriting their syntactic and semantic characteristics. It has been shown that TC is derived from the simple predication construction through RSR under the condition of SSD. It is important to note that MC (one type of SSD) and RSR, which are crucial in our argument, are not *ad hoc* principles applying only to TC. Extension based on MC and RSR can also be applied to the analysis of a few well-known tough-related constructions such as the *pretty*-construction and sentences with experiencer verbs discussed in Pesetsky (1987):

(66)  
- a. Mary is pretty.
- b. Mary is pretty to look at.

(67)  
- a. This book amuses Mary.
- b. This book amuses Mary to read.

For example, in sentences such as (66), the embedded clauses will be syntactically realized via the semantic associations of adjectives and verbs: *pretty* is closely related to *look at, delicious* to *eat, fragrant* to *smell*, etc. As for sentences such as (67a), many properties are shared with TC. For example, Pesetsky (1987) has pointed out that they are 'expressively incomplete': 'if books annoy John, they annoy John because of some other relation John has to them (p. 132)'. The relation in question will depend on lexical or discourse factors. In (67b), this expressive incompleteness has been dissolved via the addition of an infinitival clause, which has been reanalyzed through SSD and RSR, in accordance with our theory.

We have provided a dynamic explanation for what have been thought to be idiosyncratic properties of TC, but dynamic hypotheses have been presented in an unrefined way. Thus, further elaboration of the syntactic and semantic characteristics of the structures participating in the syntactic extension must be undertaken.

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