The Underlying Representation of the Tough Construction in English

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In this paper, we adopt the theoretical framework of Lexical-Functional Grammar (LFG) (Bresnan 1982a, Dalrymple et al. 1995) and propose an analysis of the tough construction in English. Our analysis is first presented as one which accounts for two kinds of tough sentences in English, i.e. those with a tough adjective complementing the copula be, and those with a tough noun complementing the copula be. For this purpose, we briefly review Yamamoto (1996) and point out two problems. One concerns the explanation of instances of tough sentences involving tough nouns, and the other, the syntax and semantics of the copular verb be and its complements. Then we go on to present our analysis of the tough construction in English which overcomes difficulties in Yamamoto's analysis. Next, we discuss yet another kind of tough sentence, as noted in Suzuki (1976), where a PP appears as the complement of the copula be. We point out that there are shared properties underlying the surface variations in the three kinds of tough sentences mentioned above.

1. INTRODUCTION

In the past thirty years have been published a substantial number of discussions on *the tough construction in English*. The tough construction is characterized by the semantic relation which is observed between the subject and a missing non-subject element inside the infinitival clause found therein. Within traditional transformational grammar (TG), the tough construction was derived via a transformational rule such as *Tough Movement* which was formulated to relate, for example, the underlying structure *It is easy for Mary to read this book* to the tough construction *This book is easy for Mary to read*. Moreover, as a trigger of such transformation, not only a class of adjectives (*tough adjectives*, such as *easy* in the above examples) but also a small number of nouns (*tough nouns*) have been identified. Tough nouns include *problem, breeze, bitch*, etc. Thus, the tough sentence *This problem was a breeze to solve*, for example, was transformationally derived from the underlying structure *It was a breeze to solve this problem*[2].

Yamamoto[3] presents an analysis of the tough construction in English within the framework of Lexical-Functional Grammar (LFG)[4,5]. This analysis posits the lexical form of the copular verb *be* in (1) and that of a tough adjective (*difficult*) in (2). So the f-structure of the tough sentence *This book is difficult for children to read* in this analysis is illustrated as in (3). Note that Yamamoto's lexical forms in (1) and (2) differ from the ones assumed in Kaplan and Bresnan's[6] description of the tough construction, where the SUBJs are analyzed as non-thematic. While referring to Kaneko's[7] convincing arguments for the thematicity of the tough subject, Yamamoto takes the position that both *be* and a tough adjective within the tough sentence subcategorize for a thematic SUBJ.

(1) *be*: V   'BE⟨(↑SUBJ)(↑XCOMP)⟩'
                 (↑SUBJ) = (↑XCOMP SUBJ)

(2) *difficult*: A   'DIFFICULT⟨(↑SUBJ)(↑COMP)⟩'
                 (↑COMP SUBJ PRED) = c 'PRO'
                 (↑SUBJ) = (↑COMP XCOMP* OBJ)

(3)

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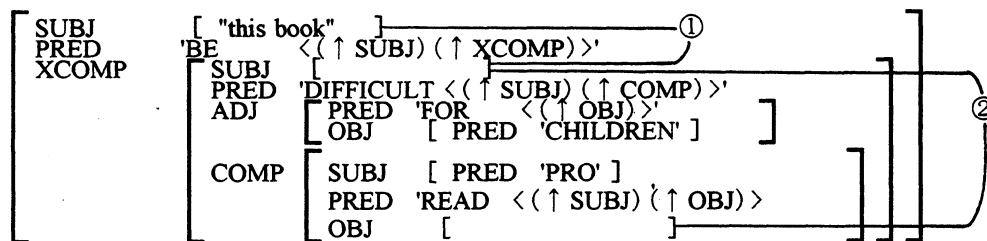
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The two curved lines ① and ② in (3) represent two instances of *functional control*[8]. Line ① shows the relation between the SUBJ(ECT) of the tough sentence *this book* and the SUBJ of the open complement (XCOMP) subcategorized by the copula *be*. This relation is ensured by the functional equation on the second line of (1). Line ② represents a long-distance functional control relation[9] holding between the SUBJ of the XCOMP and the OBJ(ECT) of the closed complement (COMP) which is subcategorized by the tough adjective. Yamamoto captures this control relation in terms of the control equation shown on the third line of (2). Note that the above two control relations inside the f-structure in account for the relation between the subject and a non-subject element inside the infinitival clause within a tough sentence; researchers in TG have attempted to explain this in terms of a transformational rule.

The f-structure in (3) contains another control relation which holds between *children* and the missing subject of the infinitival complement *to read*. Based on the optionality of the designated controller *children* within the sentence, Yamamoto identifies the PP *for children* to be an ADJ(UNCT). This control relation cannot be an instance of functional control in LFG, since the controller of functional control is defined as one of the three semantically unrestricted syntactic functions: SUBJ, OBJ, or OBJ2[8]. Hence, Yamamoto concludes that the control relation mentioned above is an instance of *anaphoric control*[6]. This control relation is ensured in Yamamoto's analysis by means of the constraining equation shown on the second line of (2). This equation constrains the value of the SUBJ within the COMP, subcategorized by the tough adjective, to be a morphologically unexpressed pronominal ('PRO'). This pronominal anaphorically refers to *children* in (3), and thus the semantic relation between *children* and the missing subject of the infinitival clause *to read* is explained.

There seems to be two difficulties in Yamamoto's approach to the tough construction in English.

Firstly, Rappaport[10] claims that nouns do not subcategorize for direct syntactic functions SUBJ, OBJ, and OBJ2. It follows then that the lexical forms of tough nouns, such as *breeze* in *This problem is a breeze to solve* are without specification of SUBJ. Moreover, the *functional coherence principle*, which is one of the well-formedness conditions on f-structures in LFG, states that all the grammatical functions within an f-structure must be governed by a local predicate[6]. Now suppose we extend Yamamoto's analysis of the tough construction to the kind of tough sentences which include tough nouns. In this case, a tough noun should provide information as the PRED of the XCOMP subcategorized by the copula *be*. However, the lack of SUBJ within the lexical form of a tough noun renders the f-structure of the XCOMP ill-formed, for the SUBJ of the XCOMP cannot be locally governed. Hence, it is impossible to maintain Yamamoto's analysis of the tough construction in explaining tough sentences which include tough nouns.

Secondly, Quirk et al.[11] classify *be* as a *stative copula* and state that the clause where *be* occurs as its verb codes a state. They also discuss that the copular verb *be* differs from ordinary verbs in that its semantic content is almost empty. Except for the information on tense, aspect and number, the semantic information copular sentences carry is mostly supplied by the complement which follows *be*. The complement of *be* can be an adjectival as in *Mary is friendly*, a nominal as in *Judy is a friend of mine*, or an adverbial as in *The students are in the language lab*. In Yamamoto's analysis of the tough construction, *be* is obviously the predicator of the tough subject both syntactically and semantically. Here Yamamoto faces a dilemma. That is, given that *be* does not have semantic content except for information on tense, aspect and number, this copula should not assign any thematic role to the tough subject by itself. However, it is assumed in Yamamoto's analysis that the tough subject, whose predicator is *be,* is thematic, thus participating in the semantics of *be*. At the same time, if the tough subject is thematic and characterizable with a thematic role, then *be*, which Yamamoto analyzes as its predicator, should have semantic content where the referent of the subject is a participant. However, this is not the case as Quirk et al. point out.

2. ANALYSIS

In our introduction of an analysis of the tough construction in English where tough adjectives or tough nouns are involved, we have made four assumptions.

First, we shall follow Yamamoto[3] and Kaneko[7], and assume that the subjects of tough sentences are thematic.

Second, if the tough subject is thematic as our first assumption states, it has to be characterized with a semantic role. Within a tough sentence, part of the attribute of the subject, i.e. part of the permanent state of the subject, is denoted by a tough adjective or noun which is felt or judged by some individual. As we have already mentioned, sentences with the copula *be* code a state. This characterization applies to tough

sentences under consideration too, since they include *be*. Bresnan and Kanerva[12] claim that theme is the semantic role of which (change of) state or location is predicated. Thus, as our second assumption, we shall assume that theme is the role which semantically best describes the subject of a tough sentence.

Third, we have discussed that the copula *be* does not carry any semantic information of the sort where any participant is involved. This point, however, contradicts our first assumption if we hypothesize that *be* is semantically a predicator of the subject within the two kinds of tough sentences under consideration. Thus, unlike Yamamoto[3], we shall consider that the instance of the copula *be* in question predicates the tough subject neither syntactically nor semantically. Instead, we shall assume that the copula *be* within the tough sentences involving tough adjectives or nouns is more like an auxiliary verb in character and does not have its own a-structure.

Fourth, given our third assumption above, we are led to consider the possibility that the thematic status of the tough subject is ensured not by the copula *be* but by the tough adjective or noun complementing *be*. Indeed, as we pointed out earlier, tough adjectives or nouns, and nothing else within tough sentences, denote the property which characterizes an entity grammatically realized as the subject. Thus, as our fourth assumption, we shall claim that tough adjectives and nouns have a-structures which promise that the referent of the tough subject is a participant of the state denoted within the sentence.

Then how is the a-structure of tough adjectives and nouns organized? It is obvious from our assumptions above that one of the semantic roles assigned to this a-structure is *theme*.

Moreover, Yamamoto[3] notes that the infinitival clause within a tough sentence denotes the action of an individual through which s/he feels difficulty or makes an judgement about the referent of the subject. The infinitival clause obviously carries part of the semantics denoted by a tough adjective or noun. Yamamoto captures this point by placing an *action* argument within the a-structure of a tough adjective, which is in turn realized as COMP within the corresponding lexical form (See (2)). In order to explain the presence of an infinitival complement within a tough sentence, let us follow Yamamoto and assume an *action* argument within the a-structure of a tough adjective and noun.

As we briefly mentioned in section 1, a PP headed by the preposition *for* optionally occurs within a tough sentence. This PP (*for*+NP) is possibly interpreted as referring to the individual who feels what is denoted by the tough adjective or noun about the referent of the subject. Consider *This book is difficult/a problem (for children) to read.*

To account for the occurrence of *for*+NP, the following hypothesis is available to us: the referent of *for*+NP is semantically described in terms of the role *experiencer* and reflects a participant of the semantics which is furnished by the tough adjectives or nouns. Yamamoto[3] states in his footnote that when the *for*+NP in question does not appear, the experiencer is interpreted as the person who utters the sentence. However, we claim that it is always the speaker who makes a subjective characterization about the referent of the tough subject. In other words, the description about the referent of the tough subject concerning its difficulty or value, or the emotional state it leads one to, invariably reflects the speaker's feeling or judgement. In this sense, the speaker is the experiencer, not the referent of the NP following *for*. For instance, in *This book is difficult for children to read*, the speaker is responsible for the judgement of *This book*'s difficulty which is expressed within the sentence by means of the adjective *difficult*. However, this adjective can denote different levels of difficulty. The presence of *for children* pins down one such level. In other words, the speaker judgement about the difficulty of *This book* applies only to the world whose members are children. Thus, the semantics of this sentence could include the speaker's judgement that children may think that this book is difficult, but adults may not.

Furthermore, given that the a-structure for tough adjectives and nouns subcategorizes for theme and that this theme is syntactically realized as the subject as mentioned above, our theoretical framework does not support an occurrence of experiencer inside the same a-structure. Within the *Lexical Mapping Theory* (LMT)[12, 13] in LFG, Alsina's[13] *Subject Principle* states that the role inside an a-structure to be mapped onto the syntactic function SUBJ is an *external argument*, if any. An external argument of the a-structure is defined by Alsina as an argument which fulfills both of the following conditions: (i) it is the top logical subject within an a-structure, i.e. the role placed the highest in reference to the hierarchy of semantic roles: *agent > beneficiary > experiencer/goal > instrument > patient/theme > locative*[14]; (ii) it is not an internal argument of the a-structure, i.e. not the role placed lower on the hierarchy than goal. Suppose both experiencer and theme appear within the tough a-structure as in < *experiencer theme* >. Experiencer is placed higher than theme on the hierarchy mentioned above. Thus, the experiencer is the top logical subject within this

a-structure. In addition, experiencer is not an internal argument, since it is not placed lower than goal on the same hierarchy. Hence, as the external argument of this a-structure, the experiencer is mapped onto SUBJ by virtue of Alsina's Subject Principle. However, in a tough sentence, the subject is characterized as theme, and not as experiencer, as we pointed out earlier.

In order to identify the status of *for*+NP within tough sentences, consider the following sentence: *For Postal, this phenomenon must be described by an additional condition on the rule of Tough Movement (actually a condition on a condition)* (*l.* 11, *p.* 546, in Lasnik and Fiengo[2]) The sentential adverbial *For Postal* adds to the sentence information about the domain where the semantics denoted in the remainder of the sentence holds. The NP *Postal* represents this domain. In other words, the world to which the statement beginning with *this phenomenon* applies is narrowed down by the presence of *For Postal* . If this PP does not appear, what is denoted by the sentence is interpreted as being applicable to the world where the speaker resides.

Here notice that the role of *For Postal* in the above sentence is analogous to that of the *for*+NP within a tough sentence, semantically and syntactically as well. That is, just like the *for*+NP within a tough sentence narrows down the world to which what is denoted by the rest of the sentence applies, *For Postal* limits the domain where what is denoted by the remainder of the sentence holds. In addition, without both these PPs, the semantics contained in the sentences is interpreted to hold true within the world where the speaker belongs to. Moreover, just like sentential adverbials such as *For Postal* above, the *for*+NP in question can occur sentence-initially and sentence-finally as well within a tough sentence, as observed in *For Bill, the rock is easy to move,* and *The rock is easy to move for Bill,* respectively[15].

We consider that the *for*+NP is a sentential adverbial which specifies the domain where the referent of the tough subject is located and characterized by what is denoted by the tough adjectives or nouns. Bresnan and Kanerva[12] state that locative predicates of theme. In addition, we have already assumed that the tough subject is associated with the semantic role theme. Hence, in this paper, we shall hypothesize that the *for*+NP which optionally occurs within a tough sentence reflects a *locative* participant of the semantics denoted by the tough adjectives or nouns, thus being subcategorized by their a-structure. Section 3 of this paper discusses an implication of this analysis.

Assuming what we have discussed so far, we shall identify the a-structure of tough adjectives and nouns with the form in (4).[1)]

(4)   *tough A / N*   <   *theme   locative   action*   >

The LMT maps the theme, locative and action onto the syntactic functions SUBJ, OBL*loc,* and COMP respectively. Thus, the LMT ensures the syntactic realization of theme, locative, and action. However, our analysis so far does not explain why the following sentences are ungrammatical: **This book φ difficult for children to read,* and **This book φ a problem for Mary to read,* where the copula *be* is missing.

Mirto[16] discusses the copular sentences in Italian such as *Giorgio è operaio* 'Giorgio is a workman,' and states that Italian copular verb *è,* which corresponds to English *be,* is an auxiliary. Mirto claims that the copula *è* does not have any argument. He also asserts that the noun *operaio* 'workman' is an unaccusative noun which has an argument, and only when auxiliated by *è,* does it assign a semantic role to *Giorgio,* the subject of the sentence. And, according to Mirto, this is how the syntactic realization of the argument of *operaio* is ensured within the grammatical structure. It is important to note here that our assumptions that *be* does not have its own a-structure and that tough adjectives and nouns have a-structures coincide with Mirto's analysis of Italian copular sentence.

Thus, taking Mirto's analysis of the copular sentence in Italian into account, we claim that the mapping of semantic roles within the tough a-structure to syntactic functions is only ensured by the presence of the copula *be.* In other words, we argue that the presence of *be* within the tough sentence allows the mapping principles in LMT to apply to the tough a-structure, and it is only under this condition that the subcategorized semantic roles get surface syntactic realization. This point is schematized below.

(5)   *tough A / N* $\overset{\phi}{\Rightarrow}$ < *theme   locative   action* >   VS.   *tough A / N* $\overset{be}{\Rightarrow}$ < *theme   locative   action* >
                         X   X   X   SUBJ OBL*loc* COMP

[1)] The optionality of *for*+NP within a tough sentence is still an open question in the current paper. Thus, a problem still exists as to the status of the locative argument in (4), which we shall leave to our future research.

It is important to notice that our analysis above explains the ungrammaticality of sentences such as *This book ∅ difficult/a problem for children to read. Furthermore, the claim that nouns do not subcategorize for SUBJ, with which Yamamoto's[3] account of the tough construction is incompatible, can be maintained within our analysis. In addition, since our analysis simultaneously captures both the thematic behavior of the tough subject and the semantic role associated with it, we do not face the dilemma found in Yamamoto's analysis which we pointed out in section 1.

3. OCCURRENCE OF THE TOUGH PP WITHIN THE TOUGH SENTENCE

Based on the example *Indeed, the nature of notions such as "acceptability" and "grammaticality" remains at present a very open question which is far beyond the scope of this study to examine*, Suzuki[17], within the framework of TG, states that not only tough adjectives and tough nouns but also PPs (*tough PPs*) serve as a trigger of Tough Movement. Note that in the above example the PP *beyond the scope of this study* is identified as the trigger of Tough Movement.

Recall Quirk et al.'s[11] statement that adverbials can complement the subject of copular sentences in addition to adjectivals and nominals, which we mentioned in section 1. Quirk et al. further observe that adverbial complements of the copula *be* are either "space adjuncts" as in *The students are in the language lab*, or "time adjuncts" as in *The party was on Saturday*. This observation leads us to the hypothesis that the adverbial complement under consideration is characterized by the semantic role *locative*, since this role designates both spatial and temporal location. If so, then, the presence of theme within the sentence is possibly expected, since location predicates of theme[12].

According to Bresnan[18], in her discussion of *locative inversion* in English and Chichewa, the basic environment for this phenomenon in both languages is described in terms of the following a-structure.

(6)   verb   < theme   locative >
                   |
                 SUBJ

And in fact, locative inversion is observed over the copula *be* as reported by Bresnan[18]. Compare *A lamp was in the corner*, with the inverted sentence *In the corner was a lamp*[18]. Thus, the copula *was* in the former sentence is characterized by the a-structure in (6).

From the discussion above, it is obvious that the instance of copula *be* complemented by a locative adverbial has a different characteristic from the instance of *be* within a tough sentence which includes a tough adjective or noun. That is, unlike the latter instance of *be*, the former instance of *be* is not auxiliary-like. Just like an ordinary main verb of a sentence, it carries semantic information which can be characterized by an a-structure.

The tough sentences with tough PPs are easily identified as instances of copular sentences with an adverbial complement. It follows then that they amount to a different analysis from the one we proposed for tough sentences with tough adjectives or nouns. Also, it is reasonable to consider the tough PP *beyond the scope of this study*, in the example mentioned in the first paragraph of this section, as carrying the semantic role locative, since it indeed denotes a location (an abstract location). Therefore, we argue that the copula *be* within the tough sentence which includes a tough PP is associated with the a-structure in (7), where mapping between the semantic roles to the syntactic functions is also indicated.

(7)   be   < theme   locative   action >
                  | | |
                SUBJ   OBL*loc*   COMP

Incidentally, let us recall our claim in section 2 that the *for*+NP which optionally occurs within the tough sentences involving tough adjectives or nouns is a locative participant within the semantics denoted by the tough adjectives and nouns. Notice that this analysis predicts that the *for*+NP in question should not occur within a tough sentence which includes a tough PP. As we argued above, the a-structure underlying the tough sentence with a tough PP subcategorizes for a locative argument. However, this locative is obligatorily realized as a tough PP on the surface. There is no locative role available for the *for*+NP inside the relevant a-structure, and accordingly the *for*+NP, as a locative, is not allowed to participate in the semantics designated by this a-structure. Hence, the occurrence of a *for*+NP within the kind of tough sentence under consideration is not expected in our analysis. Furthermore, if we suppose that a *for*+NP occurs within a tough sentence involving a tough PP, there arises a situation where the semantics of the sentence has two locative participants. It follows then, that the a-structure for the sentence must have two

argument specifications by locative. Then, the principles in LMT map both of the two locatives to the syntactic function OBL*loc*, and the resulting lexical form gets two OBL*loc* assignments. This situation, however, is prohibited in LFG because of the *biuniqueness condition* on lexical forms which states that every lexical form must be assigned a unique grammatical function[19]. And as we predict, the following sentence is judged to be ungrammatical: **This question is far beyond the scope of this study for us to examine.*

4. CONCLUSION

In the preceding sections, we discussed three different kinds of tough sentences in English, i.e. those with *be* + a tough adjective, those with *be* + a tough noun, and those with *be* + a tough PP. In addition, we pointed out that two different instances of the copula *be* are observed among tough sentences in English, i.e. the auxiliary-like *be*, and the main verb *be*. However, it is important to note that the three kinds of tough sentences in English amount to the same characterization within the framework of LFG. The a-structure which underlies all the above three kinds of tough sentences involves occurrences of a theme, a locative, and an action argument. Hence, in LFG terms, the underlying semantic environment for the tough construction in English can be summarized in the a-structure representation in (8).

(8)   the tough a-structure: $\langle$ *theme   locative   action* $\rangle$

Thus, although the tough construction in English shows variations on the surface, it is obvious that there is an underlying shared characterization. And as we have demonstrated, such characterization is made possible within the theoretical framework of LFG which assumes multiple levels of representation underlying actual sentences.

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