An RCS Approach to the *Tough*-Construction: Part II

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1. Introductory Remarks

Aniya (1994) criticizes the generative approach to the *tough*-movement construction in three phases. The first phase discusses three major problems: First, the movement of a constituent results in 'case conflict' since the constituent would be assigned two different cases. Second, the moved constituent would be assigned two distinct θ-roles, thus violating the θ-Criterion[1]. Third, the trace of the moved constituent is not properly bound within its governing category thereby violating the Binding Principle (A)[2]. The intermediate phase deals with three technical problems: The first problem is that if θ-roles were assigned in D-Structure, then no θ-role would be assigned to the moved constituent. This leads to a θ-Criterion violation (see Lasnik and Uriagereka, 1988:147). The second problem is that the coindexing of null operator and trace violates Condition (C) of Binding Principle: The trace is an r-expression, therefore it must be free from the binding condition. The third problem is that the analysis does not incorporate Kuno's (1972) observation that the *to*-infinitive clause of *tough*-sentences obligatorily denotes self-controllable action. The last phase examines Ando et al.'s (1993:241) analysis in the framework of Principles and Parameters Approach, which assigns *John is easy to please* the S-structure *John is easy* $[_{CP}O_i\ [_{IP}PRO$ *to* $[_{VP}\ [t_i^1\ [_{VP}$ *please* $t_i^0]]]]]$. This structure incorporates three innovations: (i) the empty operator *O*; (ii) the step-by-step upward movement of the *O* ; and (iii) the coindexing of the *O* and the matrix subject *John*. Ando et al.'s analysis, however, creates new problems.[3] First, *John* would

have no θ-role, therefore giving rise to a θ-Criterion violation. Second, the coindexing violates the Binding Principle (C): t_i^1 and t_i^0 are r-expressions, thus they must be free from the binding condition.[4] Finally, the coindexing between *John* and O_i is questionable due to the lack of well-grounded motivation.

Pollard and Sag (1995) also criticize the generative approach as being insufficient since the *tough*-movement does not fit well with any usual subvarieties of move-α. Two arguments are significant: First, the *tough*-movement cannot be *wh*-movement, since the constituent coindexed with the trace is in an argument position. Second, the *tough*-movement cannot be NP-movement either, because the trace is in a case-assigned position.

The purpose of this paper is twofold: (i) to examine Pollard and Sag's (1995) Head-Driven Phrase Structure Grammar (HPSG) approach to the *tough*-movement construction and then point out problems; and (ii) to offer an extended RCS analysis which suggests a unified solution for three semantic properties previously unaccounted for: (i) the subject of *tough*-movement sentences allows neither non-generic nor indefinite expression; (ii) the subject is obligatorily in a nontemporary state; and (iii) the *tough*-movement construction represents the speaker's general idea, belief, or knowledge regarding the constant state of the subject. The extended RCS analysis presents an account more general and explanatory than the competing analyses. Furthermore, the extended RCS analysis offers an effective solution to other related phenomena observed in Pollard and Sag (1995).

2. Pollard and Sag's HPSG Approach and Problems

Pollard and Sag's (1995) HPSG approach to the *tough*-movement construction hinges on two assumptions. First, *easy*-class adjectives subcategorize for three arguments: subject; (*for*-PP)[5]; and infinitive complement containing an accusative NP gap which is coindexed with the subject. Second, the subject of *easy* is role-assigned. The second assumption is reinforced with three arguments: First, the subject of

easy must be referential and role-assigned. This explains why examples like (1) are ruled out: The expletive *there* would bear an index that is nonreferential.

(1) *There is easy to believe to be a unicorn in the garden.

Second, since the subject of *easy* is role-assigned, *easy* may undergo 'null complement anaphora'[6]. In (2) below, *easy* in the second coordinated clause assigns *Sandy* THEME role making the infinitival complement *to talk to* deletable.[7]

(2) Kim is hard to talk to but Sandy is easy.

Finally, the difference in interpretation between (3a) and (3b) is accountable by the assumption that the subject of *easy* is role-assigned. The subject of (3a) carries THEME role, whereas the subject of (3b) bears INSTRUMENT role.

(3)

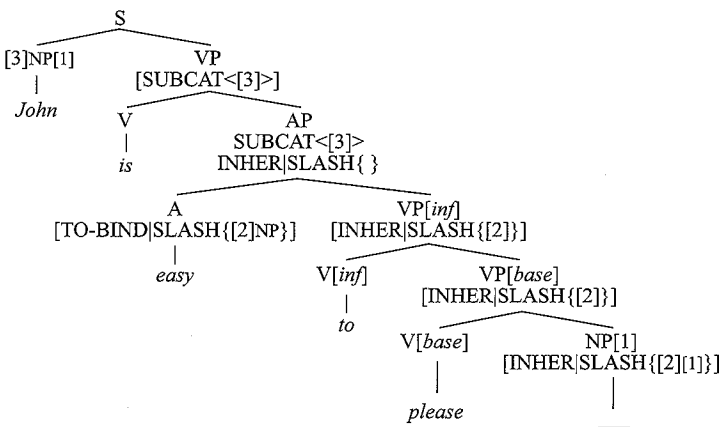
a. This sonata is easy to play on that violin.
   THEME

b. That violin is easy to play this sonata on.
   INSTRUMENT

Under Pollard and Sag's (1995) system, the *tough*-movement construction (4) would be assigned the structure (5).

(4) John$_1$ (nom) is easy to please _____ $_1$ (acc)

(5)



Here, the coindexing in terms of [1] guarantees the coreference relationship between the accusative NP gap (i.e. the object of *please*) and *John*, the matrix subject. Pollard and Sag (1995) maintain the above analysis by referring to the paradigm in (6): The acceptable examples contain an accusative gap, while the unacceptable ones have a nominative gap.

(6)

a. John is easy to please _____.
b. John is easy to persuade _____ to be reasonable.
c. John is easy to believe _____ capable of doing something that stupid.
d. John is easy to persuade Mary to kiss _____.
e. John is easy to believe Mary would kiss _____.
f. *John is easy to persuade Mary _____ is capable of doing something that stupid.
g. *John is easy to believe _____ is capable of doing something that stupid.

Although the above HPSG account avoids the problems of the movement-oriented generative analysis, it poses several problems. Syntactically, the analysis would have to assume three distinct types of adjectives: (i) attributive adjectives which subcategorize for nouns (see (7a)); (ii) predicative adjectives which subcategorize for the subject (see (7b)); and (iii) predicative adjectives which subcategorize for three arguments: subject, *for* PP, and infinitive complement containing an accusative gap. By assuming the third type, which is highly idiosyncratic, the overall subcategorization frame of adjectives becomes complicated. Consequently, the analysis misses a generalization.

(7)

a. an easy man (attributive)
b. My mind is easy. (predicative)
c. John is easy (for me) to please. (predicative)

Semantically, the HPSG analysis leaves a lingering question:

What is the motive for giving an *easy*-class adjective power to assign its subject θ-role? Only verbs and prepositions are qualified as θ-role assigners.

In the RCS approach, adjectives in general are lexically specified as nullary operators i.e. nonargument-taker words. Unlike transitive verbs and prepositions, adjectives do not subcategorize for complement.[8] This assumption offers a unified account to the above problems as we shall see shortly.

3. Preliminaries to an Extended RCS Analysis

Hereafter, I assume Brame (1982;1983;1984) for the theory of RCS, and Aniya (1994) for the RCS analysis of *tough* constructions. Aniya (1994) puts forth five claims. The first claim is that, as shown in (8), so-called *tough*-movement, extraposition, and sentential subject constructions are classified into three general types: unbounded dependency construction; focus construction; and *to*-infinitive subject construction.

(8)

a. John is easy to please.[9] (unbounded dependency construction)

b. It is easy to please John. (focus construction)

c. To please John is easy. (*to*-infinitive subject construction)

The second claim is that the *tough* operator $|\Lambda,\mathbf{T}|\$_xD,T^{\infty}X_xD>$ accounts for two characteristics of (8a): (i) the matrix subject and the object gap in *to*-infinitive clause are co-referential; and (ii) the coreference is in a long-distance relationship. The third claim is that the feature [+self-controllable] accounts for Kuno's (1972) observation that the *to*-infinitive clause of the *tough*-movement construction obligatorily shows self-controllable action. The fourth claim is that the focus operator $|It,\Gamma\$_xD3|VT^x3,_xT^{\infty}>$ accounts for the coreference relationship of *It* and the *to*-infinitive clause in (8b). The fifth claim is that the subject identity operator $|\Lambda,\$|T^{\infty},VT^x3>$ accounts for the *to*-infinitive subject in (8c).

The present RCS analysis updates Aniya (1994) by incorporating

two more features, [+specific] and [-temporary state]. These two features are the key to the previously unaccounted semantic properties unique to the *tough*-movement construction. The two features are crucial for the following reasons.

The subject of the *tough*-movement construction is incompatible with an indefinite interpretation, but it is compatible with a definite or generic reading.[10] Consider the following examples:[11]

(9)

a. *A man/*Someone would be easy to kill with a stick like that.
b. Men would be easy to kill with a stick like that.
c. **Sm* cheese is tough for Jack to eat slowly. [*Sm* = unstressed some]
d. Some cheese is tough for Jack to eat slowly.
e. *A car which I gave Bill is difficult for him to drive slowly.
f. The car which I gave Bill is difficult for him to drive slowly.
g. *A man is tough to talk to.
h. He is tough to talk to.
i. *A man is hard for Mary to please.
j. Men are hard for Mary to please.

The indefinite or nongeneric subjects give rise to non-occurring sentences (asterisked examples). On the other hand, sentences with the generic or definite subject are acceptable and natural. The acceptable subjects can be classified into the following five types.

(10)

a. the subject headed by the definite article *the*
b. the subject headed by the determiners such as *this, that, these, those,* etc.
c. the subject consisting of demonstrative
d. the generic subject headed by zero determiner[12]
e. the generic subject headed by the definite article *the*

The feature [+specific] is designed to cover all the instances of the above five cases.[13]

Another semantic constraint is that the subject of the *tough*-

movement construction must not be in temporary state (see van Oosten, 1977).[14] Consider the examples below.[15]

(11) Joe is impossible to talk to because...

a. *he is out of town.

b. he's as stubborn as a mule.

(van Oosten, 1977:468)

When the subject is in a temporary state, the sentence is unacceptable as illustrated in (11a). This motivates the feature [-temporary state] as an inherent property of the subject of the *tough*-movement construction.

4. An Extended RCS Analysis

We are now in a position to analyze (8) from a fresh perspective. For heuristic purposes, however, it is necessary to provide a sketch of relevant RCS mechanisms. Four devices are indispensable: Word Induction, Variable Continuation, $\{\ \}_x$ Identification, and SYN-SEM representation. Given below are the definitions.

(12) Word Induction

a. l-Induction

If $L_i=|\,x,\phi|\Psi_1,...,\Psi_n>\in$LEX and $L_j=|\,y,\Psi_1\sigma|\theta_1,...,\theta_m>\in$LEX, $n\geq1$, $m\geq0$, then $L_i(L_j)=|\,x\text{-}y,\phi\Psi_1\sigma|\theta_1,...,\theta_m,\Psi_2,\Psi_n>\in$LEX.

b. d-Induction

If $L_i=<\Psi_n,...,\Psi_1|\,x,\phi|\in$LEX and $L_j=<\theta_m,...,\theta_1|\,y,\sigma\Psi_1|\in$LEX, $n\geq1$, $m\geq0$, then $(L_j)L_i=<\Psi_n,...,\Psi_2,\theta_m,...,\theta_1|\,y\text{-}x,\sigma\Psi_1\phi|\in$LEX.

c. dl-Induction

If $L_i=<\alpha_i,...,\alpha_1|\,x,\gamma_1\sigma|\Psi_1,...,\Psi_n>\in$LEX and

$L_j=<\delta_1,...,\delta_1|\,y,\Psi_1\pi|\beta_1,...,\beta_j>\in$LEX and

$L_k=<\varepsilon_m,...,\varepsilon_1|\,z,\theta|\gamma_1,...,\gamma_k>\in$LEX, then

$(L_k)L_i(L_j)=<\delta_1,...,\delta_1,\ \alpha_i,...,\alpha_2,\varepsilon_m,...,\varepsilon_1|\,z\text{-}x\text{-}y,\theta\gamma_1\sigma\Psi_1\pi|\ \beta_1,...,\beta_j,$

$\Psi_1,...,\Psi_n,\gamma_2,...,\gamma_k>\in$LEX.

(13) Variable Continuation:

If $<...|\,x,\phi|\Psi X\sigma>\in$LEX and $<...|\,y,\Psi\theta\sigma|...>\in$LEX, then

$<...|\,x,\phi|\Psi\theta\sigma>\in$LEX.

(14) The $\{\ \}_x$ Identification

If $<...|x, \phi|\Psi...\{\ \}_x> \in$LEX and $<...|y, \Psi...\theta_x|...> \in$LEX, then $<...|x, \phi|\Psi...\{\theta\}_x> \in$LEX.

(15) The SYN-SEM representation

$$\begin{bmatrix} \text{SYN: } |\ \alpha\ | \\ \\ \text{SEM: } |\ \beta\ | \end{bmatrix}$$

Let us now show how the extended RCS analysis deals with each of the three constructions of general type given under (8). The unbounded dependency construction (8a) requires the following lexical specifications:

(16)

a. $|\Lambda, \$\,|\,D>$

b. $|\Lambda, \Sigma|\,\$D_n, VT^x_n>$

c. $|\,\textit{John}, D_{\{3sg\}}\,|$

d. $|\,\textit{is}, VT^{\circ}_{\{3sg\}}\,|\,A>$

e. $|\,\textit{easy}, A\,|$

f. $|\,\textit{to}, T^{\infty}|\,VT^{\infty}>$

g. $|\,\textit{please}, V_{[+sc]}T^{\infty}|\,\not{c}>$

h. $|\Lambda, \not{c}\,|\,D>$

i. $|\Lambda, {}_xD\,|$

k. $|\Lambda, \mathbf{T}\,|\,\Sigma\$_xD,\ T^{\infty}X_xD>$ (with $\$_xD$ specified [+spec, -tem.s] and $T^{\infty}X_xD$ specified [+sc])

Of importance here is the *tough* operator (16k), which is specifically designed to account for both the syntactic and semantic properties of the *tough*-movement construction: First, the long distance coreference relationship between the matrix subject and the object gap in the *to* -infinitive clause is ensured by two devices: the coindexing in terms of ${}_xD$, and the variable X. The variable X is eventually replaced with the appropriate value by the Variable Continuation. Second, the subject determiner is lexically specified as specific and constant in terms of the features [+specific] and [-temporary state]. Third, the feature [+self-controllable] guarantees the semantic property that the *to*-

infinitive clause expresses self-controllable action. Finally, the *tough* operator with the above properties is assumed to convey the speaker's general idea, belief, or knowledge about the subject. With the above development in mind, let us demonstrate a step-by-step induction of the target sentence *John is easy to please.*

(17)

a. $|\Lambda,\$\,|\,D>(\,|\,John,D_{\{3sg\}}\,|\,)=|\,John,\$D_{\{3sg\}}\,|$

b. $|\Lambda,\Sigma|\,\$D_n,VT^x_n>(\,|\,John,\$D_{\{3sg\}}\,|\,)=|\,John,\,\Sigma\$D_{\{3sg\}}\,|\,VT^x_{\{3sg\}}>$

c. $|\,John,\Sigma\$D_{\{3sg\}}\,|\,VT^x_{\{3sg\}}>(\,|\,is,VT^\circ_{\{3sg\}}\,|\,A>)=|\,John\text{-}is,\Sigma\$D_{\{3sg\}}VT^\circ_{\{3sg\}}\,|\,A>$

d. $|\,John\text{-}is,\Sigma\$D_{\{3sg\}}VT^\circ_{\{3sg\}}\,|\,A>(\,|\,easy,A\,|\,)=|\,John\text{-}is\text{-}easy,\Sigma\$D_{\{3sg\}}VT^\circ_{\{3sg\}}A\,|$

e. $|\Lambda,\mathbf{T}\,|\,\underset{[-\text{tem.s}]}{\overset{[+\text{spec}}{\Sigma\$_xD}},\ T^\infty X_xD>(\,|\,John\text{-}is\text{-}easy,\ \underset{[-\text{tem.s}]}{\overset{[+\text{spec}}{\Sigma\$_xD_{\{3sg\}}}}VT^\circ_{\{3sg\}}A\,|\,)=|\,John\text{-}is\text{-}easy,$

$\mathbf{T}\,\underset{[-\text{tem.s}]}{\overset{[+\text{spec}}{\Sigma\$_xD_{\{3sg\}}}}VT^\circ_{\{3sg\}}A\,|\,\underset{[+sc]}{T^\infty X_xD}>$

f. $|\,to,T^\infty|\,VT^\infty>(\,|\,please,V_{[+sc]}T^\infty|\,¢>)=|\,to\text{-}please,T^\infty V_{[+sc]}T^\infty|¢>$

g. $|\Lambda,¢|\,D>(\,|\Lambda,{}_xD\,|\,)=|\,¢_xD\,|$

h. $|\,to\text{-}please,T^\infty V_{[+sc]}T^\infty|¢>(\,|¢_xD\,|\,)=|\,to\text{-}please,T^\infty V_{[+sc]}T^\infty¢_xD\,|$

i. $|\,John\text{-}is\text{-}easy,\mathbf{T}\,\underset{[-\text{tem.s}]}{\overset{[+\text{spec}}{\Sigma\$_xD_{\{3sg\}}}}VT^\circ_{\{3sg\}}A\,|\,\underset{[+sc]}{T^\infty X_xD}>(\,|\,to\text{-}please,T^\infty V_{[+sc]}T^\infty¢_xD\,|\,)=$

$|\,John\text{-}is\text{-}easy\text{-}to\text{-}please,\mathbf{T}\ \underset{[-\text{tem.s}]}{\overset{[+\text{spec}}{\Sigma\$_xD_{\{3sg\}}}}VT^\circ_{\{3sg\}}A\underset{[+sc]}{T^\infty V_{[+sc]}T^\infty¢_xD}\,|$

The above derivation embodies three key points: First, the subject-verb agreement is explained in terms of the feature identity index n. The index n is aptly realized as {3sg}, which means third person singular. Second, the long distance relationship is accounted for in terms of the referential identity index x. The referential identity here involves the features including person, number, gender, etc. but not case. Notice that the referential identity index x is attached to the two instances of ${}_xD$ and not \$ or ¢. Therefore, the disagreement of case between the matrix subject and the object gap of *please* does not arise. Finally, the Variable Continuation appropriately replaces X with $V_{[+sc]}T^\infty¢$ as illustrated in (17i).

The focus operator in (18) is indispensable in accounting for (8b).

Given (18), the sentence in question can be obtained straightforwardly as pictured under (19).

(18) $|It,\ \Gamma\$_xD_{\{3sg\}}|VT^x_{\{3sg\}},\ {}_xT^\infty>$

(19)

a. $|It,\Gamma\$_xD_{\{3sg\}}|VT^x_{\{3sg\}},{}_xT^\infty>(|is,VT^\circ_{\{3sg\}}|A>)=|It\text{-}is,\Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}|A,{}_xT^\infty>$

b. $|It\text{-}is,\Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}|A,{}_xT^\infty>(|easy,A|)=|It\text{-}is\text{-}easy,\Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}A|{}_xT^\infty>$

c. $|It\text{-}is\text{-}easy,\Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}A|{}_xT^\infty>(|to,T^\infty|VT^\infty>)=|It\text{-}is\text{-}easy\text{-}to,\Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}AT^\infty|{}_xVT^\infty>$

d. $|It\text{-}is\text{-}easy\text{-}to,\ \Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}AT^\infty|VT^\infty>(|please,V_{[+sc]}T^\infty|\not\subset>)=|It\text{-}is\text{-}easy\text{-}to\text{-}please,\ \Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}A_xT^\infty V_{[+sc]}T^\infty|\not\subset>$

e. $|\Lambda,\not\subset|D>(|John,D|)=|John,\not\subset D|$

f. $|It\text{-}is\text{-}easy\text{-}to\text{-}please,\Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}A_xT^\infty V_{[+sc]}T^\infty|\not\subset>(|John,\not\subset D|)$
$=|It\text{-}is\text{-}easy\text{-}to\text{-}please\text{-}John,\ \Gamma\$_xD_{\{3sg\}}VT^\circ_{\{3sg\}}A_xT^\infty V_{[+sc]}T^\infty\not\subset D|$

The subject identity operator (20) is imperative for the analysis of the *to*-infinitive subject construction (8c). The operator transforms the *to*-infinitive clause into the subject of the sentence. Given (20), the target sentence is produced straightforwardly as shown in (21).

(20) $|\Lambda,\$|T^\infty,VT^x>$

(21)

a. $|please,V_{[+sc]}T^\infty|\not\subset>(|John,\not\subset D|)=|please\text{-}John,V_{[+sc]}T^\infty\not\subset D|$

b. $|to,T^\infty|VT^\infty>(|please\text{-}John,V_{[+sc]}T^\infty\not\subset D|)=|to\text{-}please\text{-}John,T^\infty V_{[+sc]}T^\infty\not\subset D|$

c. $|\Lambda,\$|T^\infty,VT^x>(|to\text{-}please\text{-}John,T^\infty V_{[+sc]}T^\infty\not\subset D|)$
$=|To\text{-}please\text{-}John,\$T^\infty V_{[+sc]}T^\infty\not\subset D|VT^x>$

d. $|To\text{-}please\text{-}John,\$T^\infty V_{[+sc]}T^\infty\not\subset D|VT^x>(|is,VT^\circ_{\{3sg\}}|A>)$
$=|To\text{-}please\text{-}John\text{-}is,\ \$T^\infty V_{[+sc]}T^\infty\not\subset DVT^\circ_{\{3sg\}}|A>$

e. $|To\text{-}please\text{-}John\text{-}is,\$T^\infty V_{[+sc]}T^\infty\not\subset DVT^\circ_{\{3sg\}}|A>(|easy,A|)$
$=|To\text{-}please\text{-}John\text{-}is\text{-}easy,\$T^\infty V_{[+sc]}T^\infty\not\subset DVT^\circ_{\{3sg\}}A|$

It should be noted here that the gerundive counterpart *Pleasing John is easy* can be produced along the same lines given the subject identity operator (22). Given the operator, gerundive phrases such as *pleasing John* can be transformed into the subject of a sentence.

(22) $|\Lambda,\$|VT^{ing},VT^x>$

First, let us show how gerundive transitive verbs such as *pleasing* are

produced. The word *pleasing* can be created by combining the verb *please* with the suffix *ing*. This is achieved by the d-Induction. Consider the derivation given below.

(23)

a. $(|please,V|¢>)<V|ing,T^{ing}|=|pleasing,VT^{ing}|¢>$

The rest of the derivation is shown in a step-by-step fashion under (24).

(24)

a. $|\Lambda,\$|VT^{ing},VT^{x}>(|pleasing,VT^{ing}|¢>)=|Pleasing,\$VT^{ing}|¢,VT^{x}>$

b. $|Pleasing,\$VT^{ing}|¢VT^{x}>(|John,¢D|)=|Pleasing\text{-}John,\$VT^{ing}¢D|VT^{x}>$

c. $|Pleasing\text{-}John,\$VT^{ing}¢D|VT^{x}>(|is,VT^{\circ}_{\{3sg\}}|A>)$
$=|Pleasing\text{-}John\text{-}is,\$VT^{ing}¢DVT^{\circ}_{\{3sg\}}|A>$

d. $|Pleasing\text{-}John\text{-}is,\$VT^{ing}¢DVT^{\circ}_{\{3sg\}}|A>(|easy,A|)$
$=|Pleasing\text{-}John\text{-}is\text{-}easy,\$VT^{ing}¢DVT^{\circ}_{\{3sg\}}A|$

What remains to be accounted for are examples (1)-(3). The first example calls for Aniya's (1992:177) analysis of the existential *there*: The existential *there* is lexically specified as a subject determiner which subcategorizes for tense, determiner, and preposition. Following the analysis, ill-formed expressions such as (1) cannot be produced since the existential *there* does not select an adjective as its argument. The unacceptability is accountable in terms of the lexical specification of the *tough* operator as well: The coreference relationship cannot be realized due to the mismatch between the initial argument category of the *tough* operator and the subject determiner of the existential *there*.

Let us now analyze example (2). The example is two-way ambiguous between elliptic and nonelliptic interpretations. Consider (25): (25a) is elliptic in the sense that the square bracketed phrase is omitted, while (25b) is nonelliptic. Unlike (25a), (25b) can be interpreted as *Sandy is pleasant and friendly* or *Sandy is of easy virtue*.

(25)

a. Kim is hard to talk to but Sandy$_i$ is easy [to talk to ____ $_i$].

b. Kim is hard to talk to but Sandy is easy.

In the RCS approach, (25a) is analyzed as a sentence containing an unrealized (i.e. uninduced) argument category. Consider the following partial representation of the clause in question.

(26) |*Sandy-is-easy*, $\mathbf{T}\,\Sigma\$_x D_{\{3sg\}} VT^{\circ}_{\{3sg\}} A \,|\, T^{\infty} X_x D>$
[+spec, -tem.s] [+sc]

Notice that the unrealized argument category $T^{\infty}_{[+sc]} X_x D$ contains the variable X and the free determiner ${}_xD$. If Variable Continuation (13) were applied, the variable X would be replaced with the relevant elements, i.e. $V_{[+sc]} T^{\infty} P$ which represents *talk to*. Notice also that the free determiner ${}_xD$ is associated with the subject determiner *Sandy* in terms of the coreference index x. This means that *Sandy* is correctly recognized as the object of the preposition *to* in the phrase *talk to*. On the other hand, (25b) does not involve the *tough* operator. Consequently, neither the Variable Continuation nor the coreference relationship is relevant as shown in the following partial lexical specification of the coordinated clause.

(26) |*Sandy-is-easy*, $\Sigma\$_x D_{\{3sg\}} VT^{\circ}_{\{3sg\}} A$|

Therefore, both the ellipsis and ambiguity of the example are correctly analyzed and explained.

Finally, the meaning difference between (3a) and (3b) can be accounted for given SYN-SEM REPRESENTATION together with the $\{\ \}_x$ Identification. The partial representations of the examples are illustrated below. Compare (27) with (28).

(27)

SYN: |*This-sonata-is-easy-to-play-on-that-violin*, $\mathbf{T}\,\Sigma\$_x DN_{\{3sg\}} VT^{\circ}_{\{3sg\}} AT^{\infty} V_{[+sc]}$
[+spec, -tem.s] [+sc]

$T^{\infty} ¢_x$ DPDN|

SEM: |*This-sonata-is-easy-to-play-on-that-violin*, τ $THEME_x$ VFORM PRES EASY INF VFORM INF $\{\ \}_x$ ON INSTRUMENT|

(28)

SYN: | *That-violin-is-easy-to-play-this sonata-on*, T $\Sigma\$_xDN_{[3sg]}$VT°$_{[3sg]}AT^{\infty}V_{[+sc]}$
[+spec, -tem.s] [+sc]

T$^{\infty}$¢DP$_x$D |

SEM: | *This-sonata-is-easy-to-play-on-that-violin*, τINSTRUMENT$_x$ VFORM PRES EASY INF VFORM ON { }x |

In the SYN representation of (27), the gap representing the object of *please* is associated with the matrix subject. In the SEM representation, the { }$_x$ is correlated with THEME$_x$ in terms of x. In a full-fledged derivation, the curly bracketed empty space would be replaced with THEME by the { }$_x$ Identification. On the other hand, the SYN representation of (28) shows that the gap representing the object of preposition *on* is connected with the matrix subject. Furthermore, the SEM representation depicts the correlation between the { }$_x$ and INSTRUMENT$_x$ in terms of x. In a more sophisticated derivation, the curly bracketed empty space would be filled by INSTRUMENT in terms of the { }$_x$ Identification.

5. Concluding Remarks

We have seen that the *tough*-movement construction opens up theory-internal problems unique to the generative approach. Pollard and Sag's (1995) HPSG approach offers a lexically-based account at the expense of losing generalization in the subcategorization frame of adjectives. The extended RCS analysis is superior to competing analyses in four respects: First, the theory internal problems of the generative approach and HPSG do not even arise in the RCS analysis. Second, a higher level of generalization is obtained by lexically specifying adjectives as nullary words which do not select argument. Third, *tough*-sentences are classified into the constructions of more a general type: unbounded dependency, focus, *to*-infinitive subject, and *ing*-form subject constructions. Fourth, the idiosyncratic semantic properties unique to the *tough*-movement construction are all incorporated and accounted for in a unified fashion in the extended RCS

analysis.

NOTES

1. The θ-Criterion is defined as follows:

   Each argument bears one and only one θ-role, and each θ-role is assigned to one and only one argument. (Chomsky, 1981:36)

2. The Binding Principle consists of the following three conditions:

   (A) An anaphor is bound in its governing category.
   (B) A pronominal is free in its governing category.
   (C) An r-expression is free.

   Chomsky (1981:188)

3. See Aniya (1994: 51) for detailed discussion of the problems.

4. Kaneko's (1996:35) analysis (see (i) below) raises the same problem. In (i), FP means a functional phrase which takes a nonfinite TP and *to*-infinitive phrase as its arguments; while *NO* stands for a non-lexical operator.

   (i) Johni is easy [$_{FP}$ NO_i to [$_{VP}$ PRO please t_i]]

   Kaneko evades the problem by following Chomsky's (1986:98) suggestion (presented here as (ii)).

   (ii) An r-expression is A-free (in the domain of the head of its maximal chain).

   Based on the above suggestion, Kaneko concludes that t_i in (i) is A-free in the domain of NO_i, although it is A-bound by *John* from outside its domain. This analysis, however, poses a problem. The *NO* would be moved over two bounding nodes at a time: the lower VP which contains *please* and the higher VP which includes PRO; therefore leading to a Subjacency Condition violation.

5. The parenthesized element is optional.

6. According to Pollard and Sag (1995:141) 'null complement anaphora' is a lexical process in which an infinitival complement is removed form the SUBCAT list of verbs or adjectives.

7. The sentence allows two interpretations: elliptical and nonelliptical (see Section 4 of this paper). In light of this observation,

Pollard and Sag's assumption is falsified. The direct cause of the ellipsis cannot be attributable to the assumption that *easy* assigns a θ-role to the matrix subject. In both the elliptical and nonelliptical sentences, *easy* would assign the matrix subject a θ-role. Moreover, examples such as in (i) and (ii) disprove the assumption: The absence of *easy* produces an acceptable sentence (see (i)), whereas the presence of *easy* gives rise to an unacceptable sentence (see (ii)).

(i) Kim is easy to talk to but Sandy is not.

(ii) *Kim is easy to talk to but Sandy is not easy.

8. One might produce counterexamples of the following sort.

(i) an easy-to-read book

(ii) a hard-to-cope-with diplomat

The underlined words in (i) and (ii) are closely related to the underlined phrases in (iii)and (iv), respectively.

(iii) The book is easy to read.

(iv) The diplomat is hard to deal with.

I suspect that the underlined attributive adjective phrases in (i) and (ii) are coined by back-formation: The underlined predicative adjective phrases in (iii) and (iv) were created first and then registered in the mental lexicon as idiomatic frozen forms which can be used productively in attributive environments such as in (i) and (ii). This point of view is in harmony with my claim that adjectives are nullary words, therefore they do not select argument. In the case of (i), the determiner *an* selects *easy-to-read* and *book* as its arguments. In the case of (iii), the verb *is* selects *hard* and *to*, which in turn selects *deal with*. The rest of the examples can be accounted for along the same lines.

9. The sentence is two-way ambiguous between the gap-oriented interpretation and apposition-oriented interpretation. In the former case, the 'pleaser' is not *John* but someone else, while the 'pleasee' is *John*. In the latter case, *John* is both the 'pleaser' and 'pleasee'.

10. See Postal (1971), Lasnik and Fiengo (1974), Takami (1992), and Miki (1996) for details.
11. The examples are taken from Miki (1996).
12. See Aniya (1996) for a discussion of zero determiners.
13. Generics can be classified into two types: specific and nonspecific. The former includes bare generics and generics headed by the definite article *the*, while the latter comprises generics headed by the indefinite article *a* or *an*.
14. This characteristic is unique to the *tough*-movement construction and not seen in the extraposition and sentential subject constructions (see Araki and Yasui, 1992:1511).
15. Of relevance here are examples of the following type.

    (i) *I saw Mary easy to please.

    I found Mary easy to please.

    The underlined word is interpreted as *understood* or *comprehended*. Here, the gained knowledge translatable as *Mary is an easy person for everyone to please* is obtained through mental search and stored in the speaker's mind as one of the constant psychological (and/or physical) properties of *Mary*. On the other hand, the word *saw* represents a temporary act of visualizing. It is difficult to grasp *Mary's* characteristic described above in terms of a momentary perception with the eye. For this reason the sentence at issue is semantically anomalous.

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