A Categorical Approach to the Syntax of the Existential *There*-Construction*

Sosei ANIYA

1.Introductory Remarks

This paper attempts to solve a fundamental syntactic problem of existential *there*-sentences (henceforth ES's). The problem can be worded as : How do we generate ES's in a cogent and plausible way taking number agreement into account ?

Previous transformation-oriented analyses are examined briefly in the following section and then a Recursive Categorical Syntax approach is provided with supporting arguments and evidence.

2.Previous Transformation-Oriented Analyses

Classical transformational analysis hinges on a rule of *there*-insertion (1) in generating ES's. By making use of this rule, (2b) can be derived from its source (2a).[1]

(1) There-Insertion

SA:	X	NP	Y	be	Z
	1	2	3	4	5
SC:	1	*there*	3	4+2	5

(2) a. Many girls are in every class.

b.There are many girls in every class.

Kuno (1971) has pointed out that (2a) is ambiguous between the two interpretations of (3), while (2b) allows only one interpretation, (3b).

(3) a.There are many x who exist in every class.

$(\exists\, mx)(\forall\, x)EXIST(x,y)$

b.For every class, there are many x who are in the class.

$(\forall\, y)(\exists\, mx)EXIST(x,y)$

The classical transformational analysis is incapable of explaining why the two readings of (2a) are reduced to one as a result of There-Insertion. Another technical problem is that two independent transformations, NP-postposition and the insertion of *there*, are incorporated into a single rule. Yet another problem is that a lexical item *be* has to appear as a constituent of the structural analysis. In fact, "Chomsky (1976) has rejected such complexity on metatheoretical grounds, arguing that a linguistic theory allowing individual grammars the option of building so much machinery into a single syntactic rule is unconstrained to be plausible from the viewpoint of language acquisition" (Stowell, 1978 : 458).

Kuno (1971) has offered an insertion-free analysis in which *there* is taken to be the overt trace of a locative. His explanation can be spelled out as follows : On the basis of the postulation that in English 'old information' comes first in a sentence, the old information *on the table* of (4a) is preposed into the subject position, and the indefinite subject *a book* is postposed simultaneously. As the final step of the derivation, the locative *on the table* is postposed this time and leaves *there* as its trace as shown in (4c).

(4) a.'Deep' Underlying Structure : A book is on the table
b.Early Structure (Prepose the locative using the general principle of 'old information first) : On the table is a book
c.Apply Locative-postposing : *There* is a book on the table

Well aware of the existence of locativeless ES's such as in (5), Kuno has set up the underlying structures whose initial constituents are abstract elements LOCATIVE's as pictured in (6). With the help of the magic word LOCATIVE, the ES's of (5) can now be generated by following the analogous procedure demonstrated in (4).

(5) a. There are there-sentences which lack locatives.
b. There will be no more money left.
c. There are two more weeks of school.

(6) a. LOCATIVE are there-sentences which lack locatives.

b. LOCATIVE will be no more money left.

c. LOCATIVE are two more weeks of school.

Now the criticism. Firstly, Kuno has failed to offer a motivation for Locative-postposing in (4c). The worth of this rule is questionable since its purpose seems to be nothing but to introduce *there* at the beginning of a sentence. Furthermore, if there is a trace of the locative as Kuno believes, it should be taken to be a PP. This line of reasoning would force him to analyze *there* in the following examples as a PP.

(7) a.There is a book on the table, isn't there ?

Is there a book on the table ?

b.There are there-sentences which lack locatives, aren't there ?

Are there there-sentences which lack locatives ?

c.There will be no more money left, won't there ?

Will there be no more money left ?

The grammatical subject *there* in the above examples should be thought of as an NP not a PP. Otherwise one has to accept the existence of a PP subject in addition to an NP subject. This is not only incorrect but gives rise to undesirable complexity, hence being unacceptable.

In terms of number agreement, the examples of (6) pose another problem. It is not clear how the number agreement between the notional subject and the verb *be* is correctly completed in these examples.[2]

Stowell (1978) has come up with the assumptions that : (i) the verb *be* is syntactically transitive and is subcategorized for an 'object' NP, which may be followed by an AP or a PP or *ing*-verb complements (hereafter *ing*-VC), and (ii) the base will freely generate structures with empty nodes as exemplified in (8).

(8) a. [e] was [$_{NP}$a book] [painted green]

b. [e] may be [$_{NP}$a cow] [in the barn]

c. [e] has been [$_{NP}$an angry lion] [running wild]

In addition to the above assumptions, Stowell adopts Milsark's (1974 ; 1977) there-insertion rule to fill the empty nodes at subject positions in (8). Stowell's system can be summarized in (9), where (9a) represents the underlying structure produced by the base, and (9b) is the there-

insertion rule modified and incorporated into Stowell's analysis.

(9) a. [e] -Aux-be-NP- $\left(\left\{\begin{matrix}\text{AP}\\ \text{PP}\\ \text{ing-VC}\end{matrix}\right\}\right)$

b. $\emptyset \longrightarrow$ there/ $[_{\text{NP}}\text{e}]$ -Aux

With this machinery, the underlying structures of (8) are transformed into well-formed ES's as shown below.

(10) a. There was a book painted green.
b. There may be a cow in the barn.
c. There has been an angry lion running wild.

Although Stowell's analysis is capable of accounting for the permitted types of complements which can appear after the postverbal NP, it raises a serious problem. It is not clear how the 'object' NP of the verb *be* can manage to transmit its number to the verb.

3.A Recursive Categorical Syntax Approach

I assume that the following three points represent properties essential to the syntax of ES's.

(11) a. Existential *there* is intrinsically a subject.
b. Existential *there* is subcategorized for the verb *be* and NP, and it optionally selects a PP or an AP or *ing*-VC as its complements.
c. Number agreement is a prerequisite tripartite relation between the subject *there*, the verb *be*, and the postverbal NP.

Let us now produce some arguments to support the above assumptions. As has been noted by linguists, existential *there* can appear in tags, and occupy the position right next to auxiliary verbs in questions in much the same way as other NP subjects. Reexamine the examples of (17) to verify this point.

Unlike locative *there*, existential *there* cannot occur in nonsubject position in a sentence : the underlined *there*'s in (12) are all instances of locative *there*.(See, Akmajian and Heny (1975 : 166)).

(12) a. John is over *there*.
b. The ball is *there*, under the tree.
c. *There* he goes.

Moreover, if contracted forms such as *there's* and *there're* are registered as distinct single lexical items like frozen idiomatic expressions in competent speakers' mental lexicons, these items are most likely to be directly generated as they are. If this is the case, as I believe, then the existence of such items seems to add a piece of support for the claim that *there* is intrinsically a subject.

Of equal importance is that the number agreement in ES's is not a grammatical relation involving only two constituents, the notional subject and the verb *be*. It is rather a prerequisite tripartite relation involving the grammatical subject *there* as the third element. The tripartite number agreement is not peculiar to ES's alone as the following examples exemplify.

(13) a. The man$_i$ is$_i$ a linguist$_i$.
b. They$_i$ are$_i$ witch-hunters$_i$.
c. Who$_i$ is$_i$ he$_i$?
d. Who$_i$ are$_i$ those guys$_i$?

The examples of ES's given so far in this article instantiate the proposition (11b). Since existential *there* is both the subject and the head which is subcategorized for complements as stated, it should be generated in the subject position in the first place rather than being inserted into the position by a rule of there-insertion.

We now shift the focus of attention and see how the above results are incorporated into our analysis based on the theory of Recursive Categorical Syntax. But first a brief outline of the theory is necessary to facilitate the discussion to follow.[3]

Recursive Categorical Syntax is incompatible with transformational devices. Instead of the base rules in generative transformational grammar, it makes use of a mechanism called Word Induction. This device mechanically connects words together ; hence phrases, clauses, and sentences are produced as a result. Word Induction com-

prises three devices : l-Induction, a left-to-right concatenater ; d-Induction, a right-to-left concatenater ; and dl-Induction, a concatenater of both right-to-left and left-to-right concatenations. Words are classified into two major groups, those which take arguments and those which do not. Argument-taker words are further grouped into three groups ; l-words, d-words, and dl-words. In English, objects are placed to the right of their governing verbs and prepositions. Hence verbs and prepositions, for example, are subcategorized to selects objects to their right. In order to obtain a phrase by joining a verb and its object, we need a left-to-right concatenation mechanism, that is l-Induction. The nature of d-words and dl-words, and their relation to d-Induction and dl-Induction follows from the above exposition. Since only l-words and l-Induction are immediately relevant to our analysis, we do not elaborate on the other mechanisms. Given below is the definition of l-Induction.

(14) l-Induction (Brame,1987 : 152)

If $L_i = < \mid x,\phi \mid \psi_1,...,\psi_n > \varepsilon$ LEX and $L_j = < \mid y,\psi_1\sigma \mid \theta_1,...,\theta_m > \varepsilon$ LEX, for $n \geq 1$, $m \geq 0$, then $L_i(L_j) = < \mid x\text{-}y,\phi\psi_1\sigma \mid \theta_1,...,\theta_m, \psi_2,...,\psi_n > \varepsilon$ LEX.

The initial component x in $< \mid x,\phi \mid \psi_1,...,\psi_n >$, for example,designates a phonetic or orthographic word. The second element, in this case ϕ, designates the intrinsic category of x. And the third component $<\psi_1,..., \psi_n>$ symbolizes the argument category of x. Lower case Greek letters represent categories such as D, determiner ; N, noun ; V, verb ; P, preposition ; T, tense ; etc..

The l-Induction is set into motion and connects words if the argument category of a lexical item is the same type as the head of the intrinsic category of another lexical item. This mechanical process is exemplified in (15), where the association line is employed to show that the two categories associated are the same type.

(15) $< \mid x,\phi \mid \psi > (< \mid y,\psi\sigma \mid \theta >) = < \mid x\text{-}y,\phi\psi\sigma \mid \theta >$

To make it all the more vivid, let us demonstrate how an ES can

be induced given l-Induction. But first the specification of the relevant words is essential since lexical specifications are the locus of syntactic information.

(16) a.< | scientist,3_sN | > e.< | to,T | V>
b.< | a,$D3_s$ | 3_sN> f.< | see,V | D>
c.< | Λ,$ | $D_{n,n}T^x$> g.< | the,$D3_p$ | 3_pN>
d.< | failed,3_sT^-V | T> h.< | points,3_pN | >

Nouns carry person-number, thus *scientist* is specified as third person singular. Determiners such as *a* and *the* have to be specified to carry person-number since they are the heads of DN's (NP's in transformationalist terms). Tenses are thought of as the heads of verbs ; hence they are also marked for person-number as in (16d). (16c) is for the subject identity word. This word, upon concatenation, transfers subject function to an item to which it is joined. The upper case Greek Λ designates the identity word whose intrinsic category is the subject type.$. The subscript $_n$ designates a person-number variable which ranges over I_s, first person singular ; I_p, first person plural ; 2_s, second person singular ; 2_p, second person plural ; 3_s, third person singular ; 3_p, third person plural. The superscript $_x$ indicates a tense variable which ranges over °, present ; and $^-$, past. Let us now show how l-Induction works taking a concrete example. In (17), the left-to-right concatenations have been completed observing the requirement that the argument category of one lexical item is the same type as the head of intrinsic category of another lexical item.

(17) A scientist failed to see the points.

a.< | a,$D3_s$ | 3_sN>(< | scientist,3_sN | >)=
< | a-scientist,$D3_s3_sN$ | >
b.< | Λ,$ | $D_{n,n}T^x$>(< | a-scientist,$D3_s3_sN$ | >)=
< | a-scientist,$D3_s3_sN$ | T^x>
c.< | failed,3_sT^-V | T>(< | to,T | V>)=
< | failed-to,3_sT^-VT | V>
d.< | failed-to,3_sT^-VT | V>(< | see,V | D>)=
< | failed-to-see,3_sT^-VTV | D>

e.< | failed-to-see,3_sT$^-$VTV | D>(< | the-points,D3_p3_pN | >)=
< | failed-to-see-the-points,3_sT$^-$VTVD3_p3_pN | >
f.< | a-scientist,D3$_s$3$_s$N | T^x>(< | failed-to-see-the-points,3_sT$^-$
VTVD3_p3_pN | >)=< | a-scientist-failed-to-see-the-poins,D3$_s$3$_s$
NT$^-$VTVD3_p3_pN | >

As stated earlier, the essence of ES's is *there*, which is intrinsically a subject and takes as its arguments the verb *be* and an NP, and it optionally selects a PP in transformationalist terms. This point is well taken into account in the present theory in which existential *there* is specified as in (18) :

(18) < | there,D_n | $_n$T^x,D$_n$,P>

The 'initiator' determiner *there* of ES's is per se a subject just like lexical items *he,she,they,* etc. Hence the intrinsic category $D. Notice that D_n$,$_n$T^x, and D$_n$ all carry the same subscript $_n$, which is designed to show that the person-number agreement is a prerequisite relationship between these three elements. The subject determiner *there* can also take a PP whose head is a preposition ; hence the category P can appear as the last argument category.[4] Let us now show a representative derivation of an ES. Given I-Induction (14) and the specifications of relevant lexical items in (18) and (19), the sentence in (20) can be induced as desired.

(19) a.< | are,3_pT°V | >
b.< | some,D3_p | 3_pN>
c.< | butterflies,3_pN | >
d.< | in,P | D>
e.< | the,D3_s | 3_sN>
f.< | belfry,3_sN | >

(20) There are some butterflies in the belfry.

a.< | there,D_n$ | $_n$T^x,D$_n$,P>(< | are,3_pT°V | >)=< | there-are,
D3$_p$3$_p$T°V | D$_n$,P>
b.< | there-are,D3$_p$3$_p$T°V | D$_n$,P>(< | some,D3_p | 3_pN>)=
< | there-are-some,D3$_p$3$_p$T°VD3_p | 3_pN,P>
c.< | there-are-some,D3$_p$3$_p$T°VD3_p | 3_pN,P>(< | butterflies,3_pN
| >)=< | there-are-some-butterflies,D3$_p$3$_p$T°VD3_p3_pN | P>
d.< | there-are-some-butterflies,D3$_p$3$_p$T°VD3_p3_pN | P>(| in,P
| D>)=< | there-are-some-butterflies-in,D3$_p$3$_p$T°VD3_p3_pNP

| D>

e. < | there-are-some-butterflies-in,$D3$_p3_p$T°VD3$_p3_p$NP | D>(< | the,D3$_s$ | 3$_s$N>)= < | there-are-some-butterflies-in-the,$D3$_p3_p$T° VD3$_p3_p$NPD3$_s$ | 3$_s$N>

f. <there-are-some-butterflies-in-the,$D3$_p3_p$T°VD3$_p3_p$NPD3$_s$ | 3$_s$N> (< | belfry,3$_s$N | >)= < | there-are-some-butterflies-in-the-belfry, $D3$_p3_p$T°VD3$_p3_p$NPD3$_s3_s$N | >

The person-number variable $_n$ has been replaced with the third person-plural symbol 3$_p$ to ensure the concord. The above representative derivation of an ES suffices to show that ES's can be induced in a mechanical and straightforward fashion given l-Induction and lexical specifications of relevant items.

4. Concluding Remarks

In light ofthe assumptions that (i) existential *there* is intrinsically a subject, (ii) it is subcategorized for the verb *be* and an NP, and optionally for a PP or an AP or *ing*-VC, and (iii) number agreement in ES's is a prerequisite relation involving *there*, the subject, the verb *be*, and the postverbal NP, we have come to the conclusion that existential *there* should be generated in the subject position in the first place as an integral constituent of an ES. From this we have taken a step forward and demonstrated that our Recursive Categorical Syntax approach can induce ES's taking number agreement into account in a straightforward fashion given lexical specifications of relevant lexical items and l-Induction.

FOOTNOTES

*I wish to thank Carol Rinnert for her stylistic advice on an earlier draft of this article. Needless to say, any mistake is my own.

1) Examples in (2) are taken from Kuno (1971).

2) This was pointed out to me by Sadao Ando at a monthly meeting of Gengo Bunka Danwakai ('Language and Culture Workshop') at Hiroshima University.

3) For detailed exposition of the theory, see Brame (1984,1985,1987).

4) The P can be replaced by T^{pass}, the head of AP, or T^{prog}, the head of *ing*-VC to account for the fact that an AP or an *ing*-VC can occur instead of a PP after the postverbal NP.

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