

Minimal feature-movement

YOUNGJUN JANG

Harvard University

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In this article I review two analyses of English existential constructions – the Case-transmission analysis and the expletive-replacement analysis – from the perspective of Chomsky's (1993, 1995) minimalist framework. I show that neither approach is free from empirical problems and that adopting minimalist program can reconcile these difficulties and account for more extensive data as well. I propose that LF feature-raising theory that I adopt here should be more economical than it is now, for example, in Chomsky (1995) so that only the relevant 'checkable' features raise at LF. My discussion concerns English existential constructions and Object Shift in Icelandic. In particular, I discuss (a) specificity, (b) scope and (c) negative polarity item licensing and show that the category-raising analysis of the associate of an expletive raises problems concerning these three aspects. The analysis presented in the article will be further supported by facts about predicate raising constructions.

I. INTRODUCTION¹

It has long been observed that in sentences like (1) the expletive *there* behaves like a syntactic subject, except that number agreement is between the verb and the postcopular indefinite nonsubject noun phrase (what Chomsky (1986, 1991) calls the 'associate' of the expletive):

- (1) (a) There is/*are a student in the room.
(b) There *is/are students in the room.

The agreement phenomena observed in (1) have been analyzed in at least two ways, as McCloskey (1991) notes. One of the approaches argues that the expletive and its associate form a chain, assuming that the expletive occupies a Case-marked non-theta position and the associate, a Caseless theta-marked

[1] I am deeply indebted to Samuel David Epstein with whom I have discussed the ideas presented in this article at various stages of their formulation. Without his generous suggestions and invaluable comments on earlier drafts of it, the article would not exist as it is now. I have also benefited from discussions with Noam Chomsky, Scott Ferguson, John Frampton, Eric Groat, Susumu Kuno, Howard Lasnik, Geoff Poole and Höskuldur Thráinsson. Comments from two anonymous *JL* referees helped me to clarify many points of the article. The basic ideas of the article were originally presented at the Syntax Practicum at Harvard University in the Spring of 1995. I also thank the audience there for questions and comments. My final thanks go to Melissa Cowden for proofreading and to Steve Peter for editorial assistance. All remaining errors are, of course, my own.

position (see Safir 1982, Burzio 1986, Chomsky (1986: 131), den Dikken 1995, among many others). A potential problem with this analysis is that the contrast between the following sentences may not be readily captured.

- (2) (a) There is believed to be a man killed.
 (b) *There is believed to be killed a man.

In (2b) the expletive is in a Case-marked non-theta position and its associate is in a Caseless theta-marked position, with the expletive and the associate forming a chain. In this regard (2b) is not different from (2a). Thus, on this account, both are predicted to be either grammatical or ungrammatical. However (2a) is grammatical but (2b) is not. On the other hand, Belletti (1988) and Lasnik (1992) argue that *be* and unaccusative verbs do assign and check a Case just like other transitive verbs do. If they are right, Chain-theoretic accounts of the kind just described would not work. An alternative view developed in works including Chomsky (1991, 1993), Groat (1995) and Lasnik (1992, 1995a) holds that the associate NP raises to the expletive in the LF component, by substitution or by adjunction, and does so in order to check off its morphological features or to fulfill the inadequacies of the expletive itself. Thus Chomsky (1991) argues that the associate must raise in LF in order to fulfill the inadequacies of the expletive, which is an 'LF affix', while Groat (1995) claims that the associate raises in LF to check off the phi-features of AgrS not checked by 'there', a morphologically defective NP lacking agreement features.

In this article, I will provide evidence that the entire associate NP does not undergo LF raising to the expletive position. My evidence concerns: (a) interpretational asymmetries, (b) scope relations and (c) negative polarity item (hereafter NPI) licensing. I will then show that the facts motivating LF expletive replacement can still be captured by adopting the LF feature-movement theory proposed in Chomsky (1995) and Lasnik (1995b). In so doing, I will further propose that LF feature-movement should be 'economical' in the (natural) sense that only the relevant 'checkable' features and not all the features of the associate NP raise to the checking position in LF.

2. SOME PROBLEMATIC DATA

2.1 *Interpretation*

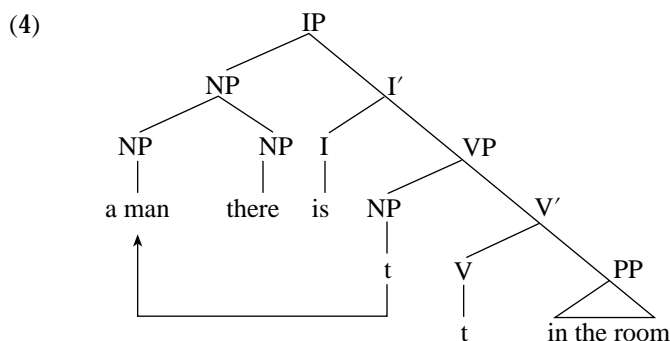
In this subsection, I will discuss English existential constructions and Icelandic Object Shift. These two constructions appear to be problematic under the LF category-raising analysis in that the specific/nonspecific interpretational difference cannot be properly captured. However, such semantic differences, unrelated as they may seem, could be correctly captured by the LF feature-movement analysis.

2.1.1 *English existential constructions*

First, the specific/nonspecific interpretational difference between (3a) and (3b) is not readily captured under the LF associate-raising analysis. Consider the following:

- (3) (a) There is [_{NP} a man] in the room.
 (b) [_{NP} A man]_i is t_i in the room.

(3a) allows only a non-specific reading of *a man*, while (3b) is ambiguous allowing both a specific or a non-specific reading of *a man* (see Diesing 1992, 1996; Groat 1995).² Chomsky (1986) argues that in (3a) the associate NP *a man*, being Caseless, substitutes for the expletive *there* in the LF component, resulting in exactly the same LF representation as that of (3b). However, these two sentences are in fact not synonymous. Noting this (and assuming that the non-symmetry is to be represented at LF), Chomsky (1991) proposes that the associate NP does not SUBSTITUTE for the expletive but rather ADJOINS to the expletive in LF, a required operation given the stipulation that an expletive ‘becomes’ an affix in LF. Thus, the LF representation of (3a) would not be (3b), but rather (4):



It is, however, not altogether clear how the specific/nonspecific semantic difference is formally captured by this adjunction analysis, since the segmented category (NP) to which the associate NP is adjoined (see May

[2] An anonymous referee points out that a sentence like

- (i) Everyone believes a man to be in the room.

is three (not just two) ways ambiguous. Thus one can add the comment ‘Unfortunately, no such man exist,’ highlighting the intermediate scope, non-specific reading. Of course, in many cases, wide scope and specificity are confused to be the same. It is clear, however, that (i) and the sentence (ii) below show the same contrast that we have witnessed between (3a) and (3b).

- (ii) Everyone believes there to be a man in the room.

LF expletive-replacement in (ii) will result in the same configuration as that of (i) and thus is predicted to yield the same interpretation. This is not a desired result, though. See Frampton (1995) for a relevant discussion and section 2.2 of this article for scope problems.

1985) acts as if it were absent for computing syntactic relations such as c-command (see also Epstein 1989, Chomsky (1995: 43–44) and Lasnik (1995b: 18–19) for relevant discussions).³ The LF adjunction analysis illustrated in (4) has been retained, though, in subsequent analyses of English existential constructions including Chomsky (1993), Groat (1995), and Lasnik (1992, 1995a) (although the ‘driving force’ for movement may differ in each of these analyses, as noted above).

2.1.2 Icelandic Object Shift

Overt Object Shift in Icelandic is usually assumed to apply to specific NPs (see Holmberg 1989, Diesing & Jelinek 1993, Jonas & Bobaljik 1993). If Object Shift applies overtly to an indefinite NP, it is obligatorily specific.⁴ Consider the following:

- (5) (a) Jón las ekki þrjár bækur
 John read not three books
 ‘John didn’t read three books.’
 [i.e., It is not the case that John read three books.]
- (b) Jón las þrjár bækur_i ekki t_i
 John read three books not
 ‘There are three books that John did not read.’
 [i.e., There are three specific books that John didn’t read, namely, X, Y, and Z.]

(5a) is a case of COVERT Object Shift. Since the N-feature of AgrO is weak in this case, it can be checked off in the LF component by the NP object *þrjár bækur* ‘three books.’ On the other hand, (5b) is a case of OVERT Object Shift induced by the strong N-feature of AgrO (see Collins & Thráinsson 1993: 133). Note, however, that both the covert Object Shift (5a) and the overt Object Shift (5b) would yield exactly the same structure in the LF component. Given that LF is the only level of interpretation, these two structures would by hypothesis receive the same interpretation since they have the same LF structure. This is not the case, though. (5a) gives only an interpretation in which *þrjár bækur* gets interpreted as non-specific three books, while (5b) gives an interpretation in which *þrjár bækur* is the specific three books.

[3] For a different view on the elements formed by adjunction, see Lasnik & Saito (1992). They argue that the postadjunction elements to which an item is adjoined is a category in its right. If this is right, the adjoined element cannot c-command its trace invariably and a violation of Proper Binding Condition (in the sense of Fiengo (1977)) occurs.

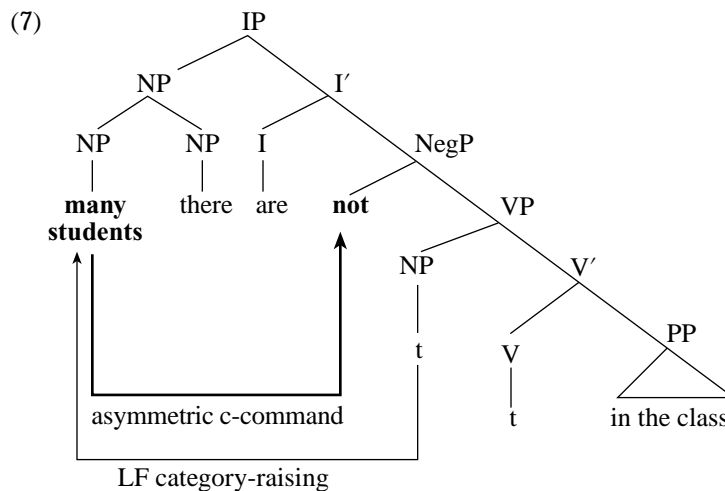
[4] Thanks to an anonymous referee for clarifying this point.

2.2 *Scope*

Scope relations also pose a potential problem for the LF category-raising analysis. Consider the following examples:⁵

- (6) (a) There are not many students in the class.
 (b) Many students are not in the class.

Under the adjunction-analysis, the LF representation of (6a) is as follows (irrelevant aspects omitted):



In the unambiguous (6a), *many* has only narrow scope vis-à-vis *not*. By contrast (6b) is ambiguous; *many* has either wide scope or narrow scope vis-à-vis *not*. However, this scopal difference between (6a) and (6b) cannot be properly captured under the LF category-raising analysis, since the LF representation of (6a), namely (7), and that of (6b) may not be sufficiently distinct: i.e. in both cases *many students* asymmetrically c-commands *not*. One might argue that the adjoined NP *many students* in (7) cannot c-command *not* due to the presence of the topmost branching NP node (see Lasnik & Saito 1992, for example). But if this node in fact blocked c-command, the LF-adjunction analysis would be altogether excluded since it would invariably violate:

- (8) α ([= an antecedent]) must c-command its trace.
 (Chomsky 1995: 304)

Thus in order to satisfy (8), May's segmental adjunction theory must be adopted. But then this incorrectly predicts that (6a) allows (if not requires)

[5] Chomsky (1991) and Lasnik (1995b) discuss this problem using basically the same data. The latter independently reached the same conclusion reached here regarding scope relations in English existential constructions. See Lasnik (1995b) for additional arguments in favor of feature-movement theory.

a wide-scope reading of *many students*. An anonymous reviewer points out that Groat's (1995) analysis may provide a solution to this problem, still keeping the LF category-raising strategy. For example, Groat claims that expletives receive a null interpretation at LF, i.e. they are effectively ignored. Furthermore, the adjoined NP is likewise invisible to LF interpretation because it is contained within the expletive. Thus, only its trace in VP is interpreted, yielding the expected scope and specificity effects (see Diesing (1992)), a desirable result.⁶ However, his account is not available for the Icelandic Object Shift data with regard to the scope and specificity effects under discussion. Consider our earlier examples in (5), repeated here as (9):

- (9) (a) Jón las ekki þrjár bækur
 John read not three books
 'John didn't read three books.'
 specificity: non-specific; scope: not > three
- (b) Jón las þrjár bækur_i ekki t_i
 John read three books not
 'There are three books that John did not read.'
 specificity: specific; scope: three > not

If there were an expletive in the spec of AgrO, Groat's account might nicely go through for Object Shift cases, too. That is, the presence of the expletive in Spec AgrO would block the shifted object from being interpreted, leaving only its trace in the (original) VP-internal position to be interpreted. In this scenario, (9a) would yield an interpretation in which *þrjár bækur* 'three books' are specific and has narrow scope vis-à-vis *ekki* 'not.' However, there is in fact no expletive available in (9a) to explain the LF 'disappearance' of the shifted object.⁷ One might claim that there is a null expletive in Spec AgrO and that this special expletive behaves exactly the way an overt one does, in any relevant sense. In this case, however, more complicated questions may arise. For example, why is it that overt expletives would appear only in SpecAgrS and null expletives only in SpecAgrO in Icelandic, given that both AgrS and AgrO are a collection of phi-features (see Chomsky (1993, 1995: 174))? In short, Groat's accounts based on LF category-raising

[6] There is an alternative along the lines of Chomsky (1995), as an anonymous referee points out. For example, when something adjoins to an expletive, it is adjoining to a head (and maximal projection). It is thus subject to conditions on WORD INTERPRETATION, assuming it is dominated by $X^{\text{min-max}}$. If it is correct that operators within words do not take scope with operators outside (following Bach 1968), in an example like (4) (and (7) of section 2.2 for this matter) 'lexical integrity' would force us to interpret the foot of the chain, as desired, since the quantificational element adjoined to *there* would have to stay frozen there. The alternative described above is not different from Groat's in its essence. As discussed in latter part of the section, a problem with this approach is that there is no expletive available in the Object Shift data and thus we cannot appeal to lexical integrity. See section 2.2.

[7] Thanks to an anonymous referee for directing my attention to Groat's work in relation to Icelandic Object Shift.

analysis are not satisfactory for the Icelandic Object Shift data. The LF category-SUBSTITUTION analysis confronts the same problem (see again section 2.1).

2.3 Negative polarity item (NPI) licensing

NPI licensing in sentences like (10) also seriously challenge the LF category-raising analysis:

- (10) (a) *Anyone is not in the room.
 (b) There is not anyone in the room.

Assuming that every movement is driven by morphological feature-checking, consider the relevant feature checking in (10).⁸ There would be two different derivations for (10a). One is (11), where overt movement takes place first to check off strong features and later covert LF movement takes place to check off weak features:

- (11) (a) [_{AgrSP} AgrS [_{TP} T [_{NegP} NEG [_{VP} Anyone is in the room]]]].
 (b) **anyone** moves to SpecAgrS in Overt Syntax (Pre-Spell-Out):
 [_{AgrSP} **Anyone**_i AgrS [_{TP} T [_{NegP} NEG [_{VP} **t**_i is in the room]]]].
 (c) **anyone** lowers to SpecNegP in LF:
 [_{AgrSP} **t**_i AgrS [_{TP} T [_{NegP} **Anyone**_i NEG [_{VP} **t**_i is in the room]]]].

In (11b) Nominative Case checking drives the movement of *anyone* to the spec of AgrSP. In (11c) checking of the Neg feature drives the movement of *anyone* to the spec of NegP. In the derivation (11), all morphological features are properly checked off, i.e., (11) converges. However, the LF representation (11c) violates the condition (8) above, and is therefore ruled out. There is an alternative derivation for the ungrammatical (10a), where feature checking takes place pre-Spell-Out and successive cyclically. This derivation must also be excluded:

- (12) [_{AgrSP} **Anyone**_i AgrS [_{TP} T [_{NegP} **t**_i NEG [_{VP} **t**_i is in the room]]]].

The Nominative Case checking drives overt movement of *anyone* to the spec of AgrSP, which leaves intermediate trace, *t*'_i, in the spec of NegP, checking

[8] The checking analysis of NPI licensing may not account for examples like (i) below, as Lasnik (p. c.) points out: How can the Neg-feature of the NPI *any paper* be checked off? Or we may need more research on the functional category NegP, i.e. its position and the mechanism of Neg-feature checking within checking theory.

(i) I gave no one any paper.

See Kawashima and Kitahara (1992) and Nishioka (1994) for detailed checking analyses of NPI licensing. As an alternative approach, an anonymous referee points out that sentences like *A doctor who knew any acupuncture wasn't available* would be problematic under the analysis given in this article. It has been well known that any approach based on c-command relation between negation and an NPI might be a potential problem. This problem may be related to a deeper nature of command relationship or to a negation itself as a sentence operator. For further discussion see Laka (1990), Linebarger (1980), Progovac (1994) and Uribe-extebarria (1994).

off the Neg feature in (11).⁹ Although (11) converges, this derivation is arguably ruled out by Binding Condition C:

- (13) An R-expression is A-free (in the domain of the Operator that locally A' binds it). (Chomsky 1982: 134)

Assuming, with Kawashima & Kitahara (1992) and with Chomsky & Lasnik (1993: 534), that an A-position (or L-related position) is a position in which Case-features and/or phi-features are checked off while A'-positions (non L-related) include positions in which Wh- and Neg-features are checked off, the derivation (11) would display the following 'improper movement' (see May 1979, Freidin & Lasnik 1981):

- (14) $[_{AgrSP} \underset{A}{\text{Anyone}}_i \text{ AgrS } [_{TP} T [_{NegP} \underset{A'}{t'_i} \text{ NEG } [_{VP} \underset{A}{t_i} \text{ is in the room}]]]]]$.

In (14), the initial trace, t_i , is an R-expression (representationally, Chomsky 1982) since it is locally A'-bound by the intermediate trace, t'_i , or because derivationally it was created by movement to an A'-position. But t_i is A-bound by $anyone_i$ occupying the spec of AgrSP. Therefore, Binding Condition C is violated. The ungrammaticality of (10a) is correctly predicted given either of these derivations.

Next, consider feature checking in the grammatical (10b). Successive-cyclic movement in LF is available for feature-checking in (10b). After checking its Neg-feature in the spec of NegP, the associate NP *anyone* further raises to the expletive position to have its Case- and phi-features checked off in the spec of AgrSP, yielding the LF representation (15):

- (15) $[_{AgrSP} [_{DP} \underset{A}{\text{anyone}}_i \text{ there}] \text{ AgrS } [_{TP} T [_{NegP} \underset{A'}{t_i} [_{Neg'} \text{ not } [_{VP} \underset{A}{t_i} \text{ is in the room}]]]]]]]$.

In (15), the adjunction position occupied by $anyone_i$ is still an A-position by the given definition of A-/A'-positions. Since the derivation in (15) yields the same LF structure, for all intents and purposes, as that of (14), it would be incorrectly ruled out by Condition C under the LF associate-raising analysis.¹⁰

[9] If the Neg feature in English is weak/uninterpretable, as we assumed in (8), the derivation in (10) is already excluded. If we assume that the Neg feature in English is strong, (10) needs to be ruled out. However, a strong Neg-feature would appear to overgenerate the following sentence:

- (i) *Bill did anyone not see in the class.
 (ii) $[_{AgrSP} \text{ Bill}_i [_{AgrS'} \text{ AgrS } [_{TP} \text{ did } [_{NegP} \text{ anyone}_j [_{Neg'} \text{ not } [_{VP} t_i \text{ see } t_j \text{ in the class}]]]]]]]$.

[10] An anonymous reviewer points out to me that Groat's (1995) analysis provides a way out of the condition C violation in (15). For example, the associate adjoined to the expletive at LF is ignored for the purpose of interpretation, and only the trace in VP is interpreted.

3. THE PARADOX

In the preceding sections, I have argued that specific/nonspecific interpretational differences, scope relations, and NPI licensing in English existential constructions provide arguments against the LF category-movement ('expletive-replacement') analysis. Recall, however, that agreement phenomena as exemplified by (16) have suggested and continue to suggest that the NP associate of the expletive does indeed raise to the expletive ('subject') position, as pointed out in the introduction:

- (16) (a) There is/*are a student in the room.
 (b) There *is/are students in the room.

Thus, it seems that we confront a contradiction: for agreement in (16) to be naturally captured as a 'Subject agreement' phenomenon, it seems that the associate NP does raise to the expletive ('subject') position. But for the reasons discussed in sections 1–3, it appears that the associate NP does not in fact undergo such raising.

4. A POSSIBLE SOLUTION

This kind of paradoxical situation may be resolved under the feature-movement theory developed recently in Chomsky (1995) and Lasnik (1995b).¹¹ LF movement, in this theory, is understood as movement of FORMAL FEATURES only, such as Case- and agreement-features, and not of the whole syntactic category (i.e., α) that the relevant features are contained in. Reconsider the previously problematic data from the perspective of this LF feature-movement theory:

Hence no 'improper' A-A'-A movement occurs. However, there still remains a problem with regard to scope relation. Consider, (i), for example.

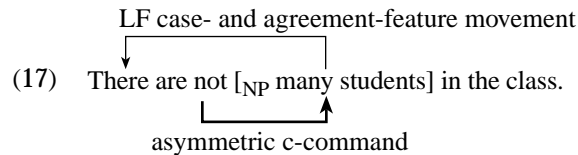
- (i) There is not a single bachelor in the ballroom dance.

If I am right in assuming that NPIs check their Neg-feature in the specifier of the functional head Neg, *a single bachelor* ends up being adjoined to the expletive with its intermediate trace in SpecNeg. Ignoring the interpretation of the adjoined associate, there are two traces, one in SpecNeg, and the other in SpecVP. Now, there is a scope relationship between this negative quantifier and negation. If an element in the specifier position c-commands its head, the negative quantifier *a single bachelor* c-commands *not* and would have wide scope over the negation *not*. Groat's analysis as it is seems to insufficient to deal with scope problems displayed by the Icelandic Object Shift data and English existential constructions.

[11] Howard Lasnik (p.c.) informs me of another possible way out of this paradox to be found in Bošković (1994). Bošković (1994: 27) proposes that: 'Instead of [the associate] raising to adjoin to *there*, *there* lowers and adjoins to its associate, with the assumption that the affix hopping of *there* either does not leave a trace or that the trace can be deleted. However, Chomsky (personal communication) points out a problem with this analysis: If *there* lowers to the associate, there is no way of capturing the associate-verb agreement phenomenon and binding/control effects. Bošković does not address NPI licensing in existential constructions discussed here.'

- (3) (a) There is [_{NP} a man] in the room.
 (6) (a) There are not many students in the class.
 (10) (b) There is not anyone in the room.

In these examples, only the formal features, such as agreement-features or Neg-features, raise to their respective checking positions in LF. For example, in (3a), only the formal features, namely, case- and agreement-features of [_{NP} a man] raise to the expletive position to be checked off, inducing no changes concerning the (nonspecific) representation of the associate NP. In (6a), again, only case- and agreement-features of the associate NP raise to the expletive position in LF while the c-command relationship between the associate (specifically *many*) and negation remains unaffected, as illustrated in (17):



Finally, in (10b), only the case- and agreement-features of the associate NP raise to the expletive position, while the Neg-feature of the associate, an NPI, raises to the spec of NegP.

Chomsky's (1995: 276) slightly different formulation of the adjunction of the associate, namely, that the features of the associate raise to INFL rather than adjoining to the expletive, does not seem to change our argumentation. Consider the following sentences (Chomsky (1995: 275–276), his (44) and (47), respectively):

- (18) (a) *there seem to each other [*t* to have been many linguists given good job offers]
 (b) they seemed to each other [*t* to have been angry]

According to Chomsky, if adjunction were in fact to the expletive, then there might be no relevant difference between (18a) and (18b). On the basis of the binding facts of this sort, Chomsky concludes that the features of the associate adjoin to the functional head AGR⁰ or T⁰ (in the AGR-less theory that he currently favors).¹² This innovation is presumably of some importance to the analysis of LF feature-raising in the Object Shift data.¹³

[12] What seems to me still unclear is how this technical innovation guarantee the binding difference between (18a) and (18b). Both the specifier position of INFL and AGR⁰/T⁰ are higher than the reciprocal *each other* in (18a). According to Chomsky, adjunction to the specifier of INFL allows the adjoined element to c-command the reciprocal while adjunction to the functional head that is clearly higher than the reciprocal does not allow c-command. It is not entirely clear how it is the case.

[13] I am indebted to an anonymous referee who suggests the relevancy of Chomsky's recent feature adjunction theory to the analysis of the Object Shift examples.

Recall that specificity and scope relationship in the Object Shift data were problematic to Groat's (1995) analysis whose central assumption was that the expletive 'instructs' null interpretation at LF. Since there is no expletive available in the Object Shift cases, Groat-style analysis apparently cannot accommodate such cases (see section 2.2).

At this stage of presentation, a word is in order concerning the status of the formal features that undergo checking. These formal features include phi-features commonly associated with the D head of DP. Following Chomsky (1995), such features are INTERPRETABLE and do not delete upon checking. An anonymous referee raises a question regarding the deletibility of checked features: If phi-features are tied to specificity as is commonly assumed, how can we account for the specificity effects discussed in section 2, since the interpretable phi-features of the DP have left VP through feature-raising, as illustrated in (19)?

- LF phi-feature movement (including specificity)
- ↓
- (19) (a) There is [_{NP} a man] in the room.
- (b) [_{DP} A man] is in the room.

In (19a), the phi-feature of the associate NP *a man* raises to adjoin either to the expletive (as I have assumed in the article) or to INFL (as in Chomsky 1995). According to Diesing's (1992) Mapping Hypothesis, an element, if moved outside the VP, would receive a specific/definite interpretation. Thus the specificity difference exhibited by (19a) and (19b) may not be correctly captured. A possible way out of this dilemma is to assume that 'semantic' features including specificity, referentiality and scope do not undergo movement for the purpose of checking. This is a clear departure from the position taken, for example, by Chomsky (1995) and Lasnik & Saito (1991). Consider, for example, Lasnik & Saito's crucial sentences:

- (20) (a) The DA proved [the defendants to be guilty] during each other's trials.
- (b) *The DA proved [that the defendants were guilty] during each other's trials.

As Lasnik & Saito note, the subject of infinitival complements in (20a) can bind the anaphor located in a matrix adjunct. However, this binding is not possible when the complement is a finite clause, as shown in (20b). These binding facts provide a strong motivation for claiming that the subject of the infinitival in (20a) moves to the matrix AgrOP at LF to have its Case checked off. If Lasnik & Saito's explanation about the facts exhibited in (20) is correct, we are naturally led to conclude that either certain featural relations suffice to licitly represent coreference (or reciprocal) relations or as an anonymous reviewer suggests, other (perhaps 'more' and perhaps 'less')

formal features raise. I have and know of no clarificatory accounts concerning this important and pervasive issue (arising throughout the feature-based account). I therefore leave this matter for future research, to which I hope the present analysis contributes. In the following section, I will return to the issue of the ‘weight’ of the features that undergo raising for checking.

5. FURTHER ISSUES

In this section, I will address two further issues as an extension of previous discussions, namely, the ‘weight’ of the features that raise and the c-command condition on feature-checking.

First, Chomsky (1995: 304) proposes two important conditions on feature movement: one is that formal features of a lexical item ‘raise along with F’ (p. 270, (33)); and the other is that ‘traces are immobile’, (p. 304, (93)) in other words, ‘traces are inaccessible to computations’. However, the following example (provided by Samuel D. Epstein, p. c.) seems to pose a problem to these two conditions:

(21) How many men do you think there are t in the room?

How can the formal features of the associate NP be checked off if the trace of t in (21) is inaccessible to computation? It seems that one way out of this dilemma is to assume that only the MINIMAL relevant ‘checkable’ features raise and nothing else.¹⁴ Thus, in (21), Case and agreement features of the trace t, which are still contained in it, raise to the expletive (or INFL, following Chomsky (1995)) position to be checked off. The entire syntactic category t itself does not raise. This therefore complies with the requirement that traces cannot be moved. Note that the Wh-feature, a kind of D-feature, of *how many men* has been raised to the head C⁰ along with phonological features for PF convergence, but the agreement and Case feature of the chain remain unchecked at Spell-Out and undergo LF raising for checking, as John Frampton suggests (p. c.).

Next, consider the following predicate-fronting examples:

[14] An anonymous referee suggests that in instances like those in (i) more features than in (21) have to raise, thus the features of the associate, a trace, cannot be checked.

- (i) (a) How many stars are likely for anyone to think t are in the sky?
- (b) *How many stars are likely for anyone to think there are t in the sky?

For example, (ib) crashes because the operator that moves (a null operator which enters into an ‘extended chain’ relation with *how many stars*) must agree with the upstairs verb *are*, and thus the features of the associate, the trace, are not checked. This suggestion, however, does not nicely fit into the proposal of this article, given that *wh*-movement raises only *wh*-feature and the phonological features for PF convergence. In addition, my informants find these two sentences equally ungrammatical. I will leave this for future topic.

- (22) (a) John_i is very likely t_i to win.
 (b) [_{CP} [_{AP} How likely]_j is_k [_{IP} John_i t_k t_j [_{IP} t_i to win]]]?
 (c) [_{CP} [_{AP} How likely t_i to win]_j is_k [_{IP} John_i t_k t_j]]?
 (23) (a) There is very likely to be a riot.
 (b) [_{CP} [_{AP} How likely]_j is_k [_{IP} there_i t_k t_j [_{IP} t_i to be a riot]]]?
 (c) *_{CP} [_{AP} How likely t_i to be a riot]_j is_k [_{IP} there_i t_k t_j]]?

Lasnik & Saito (1992: 140–142) account for the contrast between (22c) and (23c) relying on raising versus control predicative nature of *likely*. For example, the grammatical (22c) is ruled in, under the hypothesis that the trace is in fact a PRO. That is, *likely* in this case can be analysed as a control predicate. On the other hand, the ungrammatical (23c), which involves a raising predicate, is ruled out because the NP trace is not bound. However, as Huang (1993: 106–107) argues, a difficulty arises with predicates like *certain*. Consider the following examples discussed by Huang (footnote (5)):

- (24) (a) John is certain t to win.
 (b) How certain t to win is John?
 (c) How certain that he will win is John?

Note that *certain* in (24a) is a raising predicate and that (24a) and (24b) are not structurally different from (22a) and (22c), respectively. Huang points out that in (24b) the addressee is presumed by the speaker to be certain that John will win, whereas in (24c) it is *John* who is certain that he will win. Thus, a control analysis of (24b) (, and (22c) which is structurally identical), would fail to make the necessary distinction between (24b) and (24c). If I am correct in claiming that *likely* in (22) through (23) is a raising predicate and not a control predicate, how can we distinguish the grammatical (22c) from the ungrammatical (23c)? Neither the Proper Binding Condition (Fiengo 1977) nor the Chain Condition (8) seems to account for the contrast between (22c) and (23c): in both cases, the traces are not properly bound or c-commanded by their antecedents.¹⁵ Under the feature-movement analysis advocated in this article, an appeal to the accessibility of traces at LF.¹⁶ Recall that I have argued that in (21) *wh*-movement raises only the Wh-feature, a kind of D-feature, of *how many men*, along with phonological features of the NP for the need of PF convergence, while everything else remains in situ. Thus at LF the phi-feature contained in the trace raises to the expletive or to the functional head AGR⁰/T⁰. Similarly, then, we expect raising of the *wh*-phrase in (23c) to raise only its Wh-feature and phonological features, leaving everything else in situ. However, in (23c), what must be raised at LF is the features not of the moved category (as in (21)), but of an

[15] Chomsky (p.c.) suggests that the contrast might be due to a referential focus problem, meaning that a referential focus must come to the peripheral position.

[16] I have crucially relied on the suggestions from an anonymous referee for clarifying this point.

NP within the trace of that moved category. If we assume that features within traces are inaccessible to computation, then we can rule out (23c). In (21), however, the features to be checked off are conceivably the features of the trace itself, i.e. of the NP category that raised overtly, rather than being structurally internal to the trace of the moved category. Since the relevant phi-feature is not trace-internal, it is by assumption accessible to computation, and furthermore visible to Attract-F. Hence LF raising of the features is possible in (21), but not in (23c).

6. SUMMARY AND CONCLUSION

There has been a vast amount of literature concerning English existential constructions, beginning with Chomsky (1986), postulating that the associate NP does indeed raise to the expletive position for agreement and case checking in the LF component. However, we have also seen that for reasons concerning specificity, scope, and NPI licensing, it seems that the associate NP does not raise to the expletive position at LF. I have proposed a solution to this apparent contradiction supporting the feature-movement theory developed in Chomsky (1995) and Lasnik (1995b), according to which LF movement operations affect only formal features, but not syntactic categories. I have also shown that the feature-movement analysis advocated here can be extended to account for facts about predicate-fronting sentences and Icelandic Object Shift data.

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*Author's address: Department of Linguistics,
Harvard University,
77 Dunster Street,
Cambridge, MA 02138,
U.S.A.
E-mail: yjang@fas.harvard.edu*