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QUESTÕES E PROBLEMAS/SQUIBS

ERASING ERASURE[1]
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ABSTRACT: This paper argues that the distinction between deletion and erasure proposed by Chomsky (1995) to account for different checking possibilities should be abandoned on both conceptual and empirical grounds. As an alternative, the paper outlines an analysis based solely on deletion.
KEY-WORDS: checking theory, deletion, erasure, Minimalism.

RESUMO: Este trabalho argumenta que há razões tanto conceptuais quanto empíricas para se abandonar a distinção entre apagamento e rasura que Chomsky (1995) propõe para dar conta de diferentes possibilidades de checagem. Como alternativa, o squib esboça uma análise baseada somente em apagamento.
PALAVRAS-CHAVE: teoria de checagem, apagamento, rasura, Minimalismo.

1. Introduction

In consonance with his assumption that the language faculty is a nonredundant and optimal system, Chomsky (1995:sec. 4.5) proposes that movement/checking operations are triggered by the need to eliminate formal features that are not interpretable at the Conceptual-Intentional interface. These uninterpretable features include Case, strong-features, and the ϕ-features of verbs and adjectives, for instance. The technical implementation of this proposal follows the algorithm in (1) (from Chomsky 1995:280).

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(1) a. A checked feature is deleted when possible.
b. Deleted α is erased when possible.

Deletion renders some object as "invisible at the interface but accessible to the computation," while "erasure is a 'stronger form' of deletion, eliminating the element entirely so that it is inaccessible to any operation, not just to interpretability at LF" (Chomsky 1995:280). Application of either operation is taken to be governed by independently motivated grammatical considerations:

> "Possibility" in (1) [my numbering throughout; JMN] is understood relative to other principles. Thus, deletion is "impossible" if it violates principles of UG. Specifically, a checked feature cannot be deleted if it contradicts the overriding principle of recoverability of deletion, which should hold in some fashion for any reasonable system: Interpretable features cannot delete even if checked. The question of erasure, then, arises only for a -Interpretable feature F, which is erased by (1b) unless that operation is barred by some property P of F. One such property is parametric variation: F could be marked as not erased when checked (...). Erasure is also barred if it is creates an illegitimate object, so that no derivation is generated. (Chomsky 1995:280-281)

According to the proposal described above, [+interpretable] features are always accessible to the computational system and may participate in multiple checking relations because they cannot be deleted (and, therefore, cannot be erased); [-interpretable] features, on the other hand, are accessible only when unchecked, or when checked and deleted but not erased. The distinction between deletion and erasure constitutes an attempt to account for the different checking possibilities of a given feature depending on its interpretability. However, the introduction of these two operations does not seem to be conceptually justified in the Minimalist framework: if deletion by assumption makes [-interpretable] features invisible at the interface, why should the computational system bother to further erase them? If the whole purpose of feature checking is to render [-interpretable] features inert at LF so that Full Interpretation is satisfied, economy considerations should block extra operations wiping out these features.

From a Minimalist perspective, the postulation of the distinction between deletion and erasure should therefore be based on strong

empirical justification showing that descriptive adequacy would be sacrificed if one had not made use of erasure. In section 2 below, I however argue that the cases that Chomsky takes to be relevant for this distinction (transitive expletive constructions and successive movement of *there*) only suggest that one *may* – not that one *must* – resort to erasure in addition to deletion. Further cases discussed in section 3 then show that an erasure-based approach actually makes incorrect empirical predictions, whereas an analysis based only on deletion yields the correct results. This leads to the conclusion in section 4 that erasure should be eliminated from the computation from the numeration to LF.

2. The Alleged Relevance of Erasure

Chomsky's (1995:sec. 4.10.2) proposal to eliminate Agr-projections from the grammar encounters some obstacles in the case of transitive expletive constructions (*TECs*) such as (2) (from Jonas and Bobaljik 1993:76), where the subject appears to be in Spec of TP and the expletive in Spec of AgrsP.

(2) Ćać lásu einhverjir stúdentar bókina.
there read some students the-book
'Some students read the book.'

In order to account for TECs without making use of an Agrs projection, Chomsky (1995:354) suggests that strong features may be parameterized in terms of the number of times they can be accessible to the computational system after being checked:

> [O]vert MSCs [multiple specifier constructions; JMN] exist only if T has a parameterized property (...) which allows a -Interpretable feature (in this case, the strong [nominal-] feature) to escape erasure when checked. If the option is selected, then there must be a multiple-Spec construction, with n+1 Specs if the option is exercised n times. (...) In Icelandic, the descriptive facts indicate that $n = 0$ or $n = 1$; in the latter case, T has two Specs. (Chomsky 1995: 354-355)

According to this proposal, the subject *einhverjir stúdenta*r in (2) checks the strong feature of T, which is deleted but not erased; the expletive then merges with TP and checks the strong feature of T again, which is finally erased.[2]

It should be observed that what is crucial in Chomsky's proposal is that T must have two Specs in TECs, not that one must resort to erasure to ensure the expected number of Specs. Suppose for instance that a given feature F can participate in only one checking relation per checking configuration and that the relevant parametric property is that T in Icelandic may have two strong [nominal-] features. If so, the TEC in (2) would be generated after the subject and the expletive each checked and deleted one of the two strong [nominal-] features of T. The point here is not to argue this is the proper way to handle TECs (see Zwart 1997, among others, for an analysis), but rather to show that it is possible to technically implement Chomsky's (1995:354-355, 373-375) analysis of TECs without resorting to erasure. In other words, TECs cannot be taken as compelling evidence for the distinction between erasure and deletion. Since this distinction represents a departure from optimality, what we actually need is evidence showing that we are forced to postulate it.

Let us now consider the raising of *there* in constructions such as (3) below. Chomsky (1995:287) argues that the expletive *there* has a D-feature, but no Case or ϕ-features; in addition, he suggests (p. 287) that the categorial feature of there is [-interpretable]. As a [-interpretable] feature, the D-feature of *there shou*ld in principle be deleted and erased after checking the strong feature of the embedded T in (3). Were that the case, however, *there* would be unable to raise and check the strong feature of the matrix T, yielding an incorrect result.

(3) [$there_i$ seems [t_i to be a cat on the mat]]

Chomsky (1995:281) prevents this situation from arising by introducing a condition requiring that terms (constituents) cannot erase.

[2] Chomsky (1995:368) suggests that the order expletive-V+T-subject observed in (2), which is not predicted by his analysis, is the result of phonological rules having to do with the V2 nature of Icelandic.

Under the assumption that *there* lacks semantic features (see Chomsky 1995:287), erasure of its D-feature in the embedded clause of (3) would have the effect of erasing a constituent in the mapping to LF: D is arguably the only formal feature of *there* and its phonological features are carried away by Spell-Out. Thus, after being checked in the embedded clause of (3), the D-feature of *there* should be deleted but not erased; by assumption, the deleted expletive would then be still accessible to the computational system and could therefore raise and check the strong feature of the matrix T.

It should be noted that raising of the *there* in (3) may require the postulated distinction between deletion and erasure in Chomsky's (1995) system only if the categorial feature of expletives is exceptional in being [-interpretable]. Although this is certainly a reasonable assumption to make, there is not much to be made out of this, given that a worked-out analysis of the interpretation of categorial features at the C-I interface is still to be provided in the Minimalist framework.[3] In absence of such an analysis, the simplest account of (3) would be to assume that the categorial feature of *there*, like all categorial features, is [+interpretable] and can participate in more than one checking relation.[4] Hence, *there* should be able to check the embedded and the matrix EPP-feature of (3).

At any rate, it is interesting to observe that Chomsky's analysis of (3) requires that erasure must *not* apply. This is certainly the weakest kind of argument that one could use to support the postulation of erasure.

3. Problems with Erasure

3.1. Expletives and Minimality Effects

Chomsky (1995:287) argues that expletives such as it have D-, Case-, and ϕ-features. Assuming this to be the case, consider the structure

[3] Chomsky (1999:5) actually seems to endorse proposals that attempt to eliminate categorial features.

[4] Suggestive evidence for taking the categorial feature of *there* to be [+interpretable] is the fact that *there* presumably provides the relevant existential closure for variables introduced by indefinites in existential constructions.

in (4) below, where the expletive is inserted in the embedded subject position and enters into a checking relation with the embedded T. According to Chomsky's (1995:sec. 4.5) checking theory, the Case– and ϕ-features of the expletive, which are arguably [-interpretable], are deleted and erased after being checked. In consonance with Chomsky's analysis of (3) reviewed in section 2, the categorial feature of it is in turn deleted but not erased (otherwise, a constituent would be erased in the mapping to LF).

(4) $[_{TP}$ T seems $[_{CP}$ that it was told John $[_{CP}$ that he was fired]]]

Since the categorial feature of the expletive in (4) has been only deleted, it is still accessible to the computational system in Chomsky's approach; the expletive can then raise to the matrix subject position and check the strong feature of the matrix T, as shown in (5).

(5) *$[_{TP}$ it_i T seems $[_{CP}$ that t_i was told John $[_{CP}$ that he was fired]]]

In turn, the set of formal features (FF) of John can raise in the covert component (see Chomsky 1995:sec. 4.4.4) and check its own Case-feature and the Case– and ϕ-features of [FF(seems)+T]. Crucially, movement of FF(John) over the trace of the expletive should not yield a minimality effect, because the Case– and ϕ-features of the trace of it, which could block this movement, were erased after being checked;[5] the D-feature of the trace of the expletive in (5) should thus be as transparent for the movement of FF(*John*) as the D-feature of the trace of *there* in (3) for the movement of FF(*a cat*). Chomsky's

[5] On the relevance of types of positions/features for locality computations, see Rizzi 1990, Ferguson and Groat 1994, Chomsky 1995:chap. 3 and chap. 4, among others. Throughout this paper, I will be assuming the Minimal Link Condition stated in (i) and the notion of closeness stated in (ii) (see Chomsky 1995:311, 356). For the definition of minimal domain, see Chomsky 1995:177-178.

(i) *Minimal Link Condition*: K attracts α only if there is no β, β closer to K than α, such that K attracts β.

(ii) *Closeness*: α is closer to γ than β is iff (a) γ c-commands α and α c-commands β; and (b) α is not in the same minimal domain as γ or β.

(1995: sec. 4.5) analysis therefore incorrectly predicts that (5) should yield an acceptable sentence.

Addressing this problem, which was independently noted by Eduardo Raposo, Chomsky (1995, MIT Fall lectures) suggested that the unacceptability of (5) could be accounted for if in languages like English, nominative Case and ϕ-features related to subject agreement cluster together and cannot be checked independently. Assuming that only the Case-feature of the expletive is erased in the intermediate subject position of (5), the ϕ-features are piedpiped to the matrix subject position when the D-feature is attracted by the strong feature of T.[6] The resulting structure places the ϕ-features of it in a checking configuration with [FF(seems)+T], but does not allow any checking to proceed: by hypothesis, the ϕ-features of [FF(seems)+T] can only be checked in conjunction with Case and the Case-feature of the expletive has been previously erased. Assuming that the computational system interprets this lack of checking between the two sets of ϕ-features in a checking configuration as feature mismatch, the derivation is then canceled (see Chomsky 1995:310). Notice also that the Case and ϕ-features of FF(John) cannot raise to check the corresponding features of [FF(seems)+T], because the ϕ-features of the trace of it induce a minimality effect. Hence, the sentence corresponding to (5) is correctly predicted to be unacceptable.

This proposal however fails to account for the structure in (6), where *it* raises to the subject of the infinitival clause to check the EPP.

(6) *[$_{TP}$ I believe [$_{TP}$ it$_i$ to be likely [$_{CP}$ that t$_i$ was told John [$_{CP}$ that he was fired]]]]

Given that Chomsky's suggestion that Case and ϕ-features should be checked together is restricted to nominative and subject agreement (in

[6] This approach tacitly requires two questionable assumptions: (i) that the ϕ-features of the expletive *it* are [+interpretable]; and (ii) the categorial feature of *it* differs from the categorial feature of *there* (see section 2) in being [+interpretable]. If these assumptions are not made, the system could erase either the D- or the ϕ-features of the expletive in (4) and still comply with the condition that constituents cannot be erased.

languages such as English), it is irrelevant for the accusative Case of the ECM verb believe. Once the Case-features of it and its trace have been erased, FF(John) should be able to raise in the covert component to check its Case-feature against the Case-feature of *believe*, with no problems regarding minimality. Again, an incorrect result.

Due to reasons of space, I will not explore possible amendments to extend Chomsky's suggestion to constructions such as (6).[7] The reader may have noticed that the problems related to the unacceptability of the sentences corresponding to (5) and (6) only arise if it is assumed that a deleted feature may undergo erasure. Suppose, by contrast, that there is no operation of erasure in the mapping to LF and that a deleted feature cannot participate in further checking relations. If so, the deleted Case-feature of the expletive cannot enter into a checking relation with the matrix T in (5) or the verb *believe* in (6). However, since this feature is present in the structure, it induces minimality effects, preventing movement of FF(*John*) for purposes of Case checking (see fn. 4) and causing the derivations of (5) and (6) to crash. The relevant convergent derivations are given in (7a) and (7b), respectively, where *John* moves overtly and the expletive is inserted in the higher subject position.

(7) a. $[_{TP}$ it T seems $[_{CP}$ that John$_i$ was told t_i $[_{CP}$ that he was fired]]]
b. $[_{TP}$ I believe $[_{TP}$ it to be likely $[_{CP}$ that
John$_i$ was told t_i $[_{CP}$ that he was fired]]]]

[7] For instance, one could explore the possibility that (6) could be accounted for if accusative Case must also be checked together with ϕ-features; the ϕ-features of the expletive would then block the movement of the ϕ-features of John for purpose of Case checking, causing the derivation to crash. However, by tacitly assuming that English verbs have object agreement features, this amendment is conceptually comparable to the postulation of an Agr projection; in both cases, the primitives introduced in the theory are motivated only by theory-internal considerations and not by bare output conditions. Under Minimalist guidelines, one should shy away from such theoretical moves (see Chomsky 1995:sec. 4.10.1 for relevant discussion). At any rate, as shown below in the text, the data in (5) and (6) can be explained without extra features, if the erasure operation is dispensed with.

3.2. Multiple Lexical Entries

Another minimality problem arises in the derivation of (8c) below, where the preposition *to* is missing. Given that Case is a [-interpretable] feature in Chomsky's (1995) system, *expect* in (8a) and (8b) should not be understood as a single verb which may optionally check its Case-feature, but rather as two different lexical entries: a Case-assigning entry in (8a) and a Caseless entry in (8b) (see Chomsky 1995:308). Taking this to be true, let us consider the derivation of (8c) under Chomsky's assumptions. The head of the chain CH = ([a book], t) check its Case-feature, which is then deleted and erased; assuming that if a feature of a chain link is affected by an operation, the corresponding feature of the other links is also affected (see Chomsky 1995:chap. 4, fn. 12), the Case-feature of the tail of CH is also deleted and erased. The unacceptability of (8c) should then follow from the fact that *the library* does not have its Case-feature checked.

(8) a. John expected [a book]$_i$ to be donated t$_i$ to the library
b. John expected that [a book]$_i$ was donated t$_i$ to the library
c. *John expected that [a book]$_i$ was donated t$_i$ the library

Notice, however, that this reasoning holds true only under the assumption that the matrix verb in (8c) is an instance of the Caseless entry of *expect*. Suppose, on the other hand, that in (8c) we have an instance of the Case-assigning entry. If so, the formal features of *the library* could raise and check its Case-feature against the Case-feature of *expected*, and the derivation should converge. Crucially, the Case-features of the embedded subject and its trace have been erased and cannot prevent movement of FF(*the library*). Therefore, the unacceptability of the sentence resulting from (8c) in a system that allows deleted features to be erased remains to be explained.

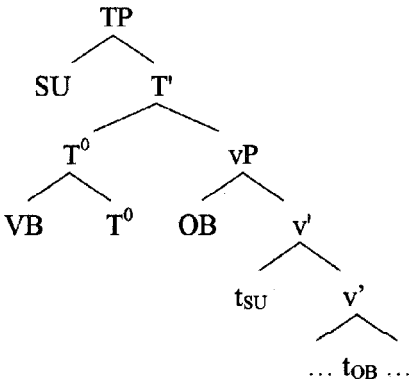
If the operation of erasure is abandoned, on the other hand, (8c) is accounted for straightforwardly. Even if we have the Case-assigning entry of *expect*, the intervening (deleted) Case-feature of *a book* prevents

FF(*the library*) from moving and checking Case, causing the derivation to crash at LF; hence, the unacceptability of (8c).[8]

3.3. Covert Movement of Objects

Chomsky (1995:359-361) proposes that the structure of the T head at LF is determined by the "poverty of interpretation conjecture", according to which "forms that reach the LF level must be as similar as typological variation permits – unique, if that is possible" (Chomsky 1995:359). In languages with overt movement of the subject, the object, and the verb, the structure of T at LF is as shown in (9), where VB is the complex formed by the light and the main verb.

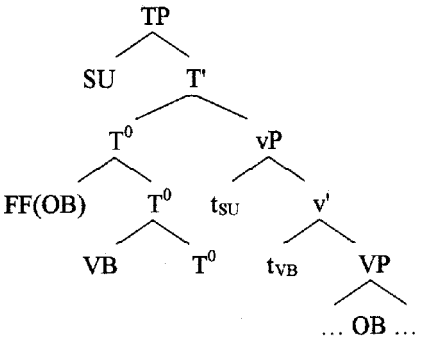
(9)



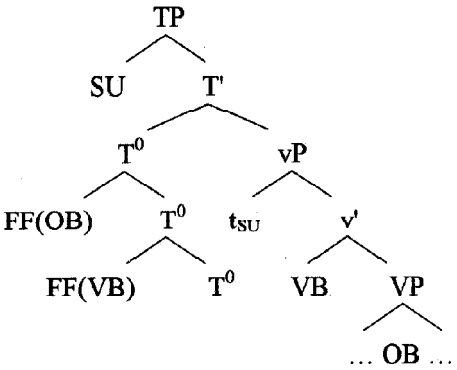
[8] Based on the sentence in (i) below, where a CP arguably checks nominative, one could say that (8c) should be independently ruled out if the complement CP checks the Case of *expect*. However, the sentence in (ii), where the matrix verb is passive and the expletive *it* checks nominative, suggests that a CP may but need not check Case. Thus, the point made above remains essentially the same: if the complement CP in (8c) need not check Case, the (deleted) Case-feature of *a book* must be the responsible for preventing movement of FF(*the library*) for purposes of Case-checking.

In order to "maximize similarity," Chomsky then proposes that in languages in which the subject moves overtly but the object moves covertly, the formal features of the object adjoin directly to T, yielding (10) or (11), depending on whether verb (VB) movement takes place overtly or covertly.

(10)



(11)



(i) That he should arrive on time was expected.
(ii) It was expected that he should arrive on time.

Also, as a reviewer pointed out, in order for the argument regarding (8) to go through, it must be the case that the Caseless and the Case-assigning entries of *expect* select for the same kind of constituent. If the Caseless entry selects for CP and the Case-assigning entry selects for IP, the mixed possibility in (8c) will simply not arise. For arguments that both instances of expect in (8a) and (8b) select for CP, see Ormazabal 1995.

What is relevant for our discussion is that although the object in (9) lands in the minimal domain of the trace of the subject in compliance with the Minimal Link Condition (see fn. 4), in (10) and (11) FF(OB) crosses the intervening trace of the subject in Spec of vP, in violation of this locality condition. The movement of FF(OB) in (10) and (11) is actually allowed in Chomsky's (1995) system, given his stipulation that the formal features of traces of A-movement are deleted and erased (p. 304). We have seen in the previous sections that empirical data do not warrant the postulation of an additional operation of erasure. The contrast in (12) (from Chomsky 1995:274; see Cardinaletti 1997 for further discussion) suggests that an erasure-based approach also makes incorrect empirical predictions regarding the proposed movement of FF(OB) in (10) and (11).

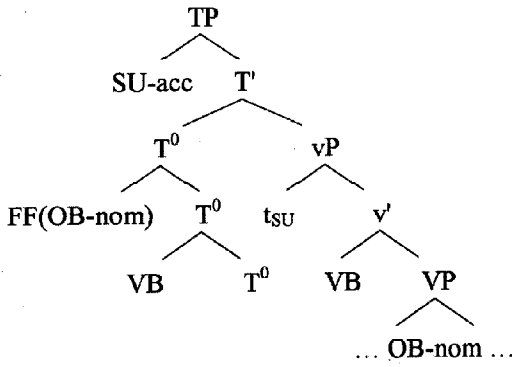
(12) a. There arrive three men (last night) without identifying themselves.
a.*I met three men (last night) without identifying themselves.

The (marginal) acceptability of (12a) is attributed to the fact that in the covert component, FF(*three men*) raises and adjoins to T, from where it can control PRO in the adjunct clause and indirectly license the anaphor. Thus, if FF(*three men*) in (12b) could adjoin to T, as represented in (11), it should also be able to control PRO and license the anaphor, contrary to fact. If we do not resort to erasure, on the other hand, adjunction of FF(OB) to T in (10) and (11) for purposes of Case checking is blocked by the intervening (deleted) Case-feature of the trace of the subject in the Spec of vP. Assuming that the nonfinite clause in (12b) is adjoined to vP, PRO is not c-commanded by FF(OB) and the unacceptability of (12b) follows.

Another serious problem for Chomsky's approach was brought to my attention by Marcelo Ferreira (personal communication, 1998). If FF(OB) can freely cross the trace of the subject, the system overgenerates. Consider the structure in (13), for instance, which is derived through the following derivational steps: (i) a nominative DP is merged as the object of the main verb and an accusative DP is merged as the specifier of the light verb; (ii) VB moves and adjoins to T^0; (iii) the accusative DP

moves overtly to Spec of TP to check the EPP and checks its Case against VB;[9] and (iv) FF(OB-nom) moves covertly and adjoins to T^0, checking its nominative Case against T.

(13)



By allowing the derivation sketched above, Chomsky's approach has the undesirable consequence that it predicts that in a verb-movement language with overt Case morphology, the two sentences in (14) should be synonymous: (14a) would be derived along the lines of (10) and (14b) along the lines of (13). That languages allowing such an ambiguity are unlikely to exist casts even more doubts about Chomsky's proposal that FF(OB) can cross the trace of the subject in the Spec of vP.

(14) a. He-nom kissed her-acc
b. He-acc kissed her-nom

If FF(OB) cannot skip the trace of the subject without yielding a minimality violation, as argued above, it remains to be explained how the object can have its Case checked covertly. The simplest assumption is that FF(OB) adjoins to the element that actually checks its Case-feature,

[9] Given that θ–role assignment and feature checking are in complementary distribution in Chomsky's (1995:chap. 4) system, the subject in (13) could not have checked its Case in situ because Spec of vP is involved in a thematic relation.

namely, the verbal complex VB (or its trace, in the case of overt verb (VB) movement).[10] Notice furthermore that this approach is not incompatible with Chomsky's poverty-of-interpretation conjecture. According to the approach pursued here, there are only two LF configurations for T and the light verb head across languages, as far as subject and object movement is concerned. Languages with overt subject movement have the subject in the specifier of T and languages without overt subject movement have FF(SU) adjoined to T; in turn, in languages with overt object movement, the object is in the specifier of VB and in languages without overt object shift, FF(OB) is adjoined to (the trace of) VB.

3.4. Overt Erasure and Morphological Computations

Finally, a more technical problem for Chomsky's erasure-based analysis is related to the assumption that Morphology deals with the formal features shipped to the phonological component by Spell-Out (see Chomsky 1995:230-231). Checking operations that take place prior to Spell-Out should erase [-interpretable] features and presumably cause problems in the morphological subcomponent. Addressing a similar issue, namely, how to allow overtly erased [-interpretable] features to have a PF reflex, Chomsky (1995:chap. 4, fn. 50) suggests that overt erasure of F could be interpreted "as meaning conversion of F to phonological properties, hence stripped away at Spell-Out." Again, this problem and the complication to solve it arise only if erasure is postulated in addition to deletion. Under a deletion-only approach, a feature deleted overtly is invisible at the interface, but is present in the structure and may be available for morphological computations.

[10] The assumption that traces cannot be targets of movement (see Chomsky 1995:304) is an extension of the assumption that traces are irrelevant for computing locality. Once the latter should be dropped on conceptual and empirical grounds, as argued above, there is no reason to keep the former.

4. Conclusion

The discussion in sections 2 and 3 shows that the introduction of the operation of erasure in addition to deletion is not only redundant from a conceptual point of view, but it actually leads to wrong empirical results by wiping out deleted features that should induce minimality effects or be handled by Morphology. The data discussed in Chomsky (1995:sec. 4.5) and the problematic data discussed above can be accounted for straightforwardly if (i) erasure is eliminated from the mapping from the numeration to LF; (ii) all categorial features are [+interpretable]; and (iii) deleted features cannot participate in further checking relations.

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